

# **Massachusetts Bay Transportation Authority**

## **Framingham State College Commuter Rail Station Feasibility Study**

**Framingham, MA**

Prepared by



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## EXECUTIVE SUMMARY

### Introduction

The Massachusetts Bay Transportation Authority (MBTA) is evaluating the feasibility of extending commuter rail service along a spur off the MBTA Framingham/Worcester Line from downtown Framingham to the Framingham State College (FSC) campus. This study evaluates reactivation of commuter rail service along 1 to 1 ½ miles of the Fitchburg Secondary Line that extends northwest from the wye, just east of Framingham Station. The tracks and station site would be located along CSX track/right-of-way on this existing freight line. Service would extend to one of two potential sites for a transit station and parking garage on the FSC campus that are situated on existing parking lots owned by Framingham State College.

The study was conducted as a component of a larger study, the Worcester Commuter Rail Service Improvement Project. The goal of the overall project was to examine midday service improvements on the Framingham/Worcester commuter rail line (also known as the CSX Boston & Albany Line) through addition of a third operating track near CSX railyards in Framingham and Worcester.

### Background

Passenger service on the Fitchburg Secondary Line last operated in 1931. The Fitchburg Secondary Line extends northwest from the wye in downtown Framingham beyond Framingham Center at the Framingham State College campus, Route 9, and I-290 in Northborough. Potential future extension of commuter rail service on the Fitchburg Secondary Line, listed as the *Commuter Rail Line from Framingham to Leominster*, is a component of the Program for Mass Transportation, the MBTA's capital planning element for the year 2025. Commuter rail service on the Fitchburg Secondary Line was previously studied in 2001 for the *I-290/Northborough Commuter Rail Extension Feasibility Study*. Ridership forecasts developed in the study indicated that a station on the FSC campus, the furthest inbound station, would have the highest ridership of the prospective stations along the line.

Due to the proximity of the CSX rail line, Framingham State College (FSC) approached the MBTA about joint sponsorship of this feasibility study to collocate a station site and a parking facility. The college's interest would be in providing transportation alternatives for students commuting to campus and additional student parking. The proposed parking garage facility would be jointly used by MBTA patrons and by FSC undergraduate students. The college is experiencing a severe parking shortage, as 61% of the colleges undergraduate students are commuters, the vast majority of which arrive by automobile. Fall enrollments for FSC totaled 6,156 graduate and undergraduate students, with 3,892 full-time undergraduates, of which 2,392 either live in off-campus housing or commute to school. Several parking lots accommodate commuter students, and two of the larger lots, the Maynard Road and Maple Street lots, are



located adjacent to the CSX Fitchburg Secondary Line. The college would like to provide an additional 300 spaces within a new parking garage to be located at one of the two prospective sites: the Maynard Road parking lot off Salem End Road, south of Route 9, and the Maple Street parking lot south of campus, which is north of the Sudbury River and adjoins the FSC athletic fields.

## **Project Setting**

The Fitchburg Secondary Line extends roughly 37 miles from the wye with the Boston and Albany Line to connect with the Fitchburg Line in Fitchburg. The Fitchburg Secondary Line consists of a single-track structure, but consisted of two tracks at one time. Just north of the wye in Framingham, the line extends through North Yard, which is used by CSX for staging of freight trains. Passenger rail service last operated on this portion of the Fitchburg Secondary Line in 1937. Today, only freight service operates, with most of the service limited to the North Yard area, and one train per day going beyond this location. The line continues north, crossing under Mount Wayte Avenue, over the Sudbury River, and crossing at grade at Maple Street and Salem End Road, before crossing Route 9. The Fitchburg Secondary Line extending from the wye at Framingham Station north to Route 9 is classified by CSX as part of the Framingham North Yard, which confers a 10 mile per hour (mph) maximum operating speed within yard limits.

The two prospective transit station/parking garage sites are both situated along the east side of the Fitchburg Secondary Line, with Maynard Road the northerly of the two sites. The Maynard Road site is proximal to the Salem End Road grade crossing, the main FSC campus and College Center, Route 9, and commercial areas and multi-family housing off Route 9. The lot currently accommodates 430 spaces on 3.2 acres, and the grade of the lot is substantially lower than the academic areas of the campus. The Maple Street lot is more remote from, and ½ mile south of, the main campus. This lot has less capacity and accommodates 286 spaces on 3 acres. Access from campus to the lot is provided by a shuttle bus service. The FSC Street athletic fields are located on the opposite (west) side of the tracks from the Maple Street lot, and undeveloped lands owned by the Massachusetts Department of Conservation and Recreation property along the Sudbury River border on the site to the south. The remaining areas to the north and east along Maple Street consist of residential neighborhoods.

## **Proposed Project**

### **Transit/Station Platform Concepts**

The major physical impediment to reactivation of passenger rail service is the current classification of this segment of the Fitchburg Secondary Line as yard track. Track improvements and changes in signalization to accommodate commuter rail service on the Fitchburg Secondary Line would be based on the outcome of negotiations with CSX. However, the following assumptions have been made regarding infrastructure improvements required to accommodate passenger service.



The project would involve track improvements to bypass the CSX North Yard freight train staging area. Reclassification of the yard limits for the passenger track from its current location at Route 9 south to where the bypass track extends around the North Yard and ties back in to the Framingham wye would also be required. A separate siding track would be extended on the west side of the yard to the western wye track with the Framingham/Worcester Line to allow freight trains to access the yard on a segregated track. Approximately 2,800 feet of bypass track for passenger trains on the east side of the yard and roughly 600 feet of siding track would be constructed. This would allow operating speeds for passenger trains to be increased from 10 mph to operating speeds of 30 to 45 mph, dependent upon the outcome of negotiations with CSX. Two new interlockings along the bypass would be created, with two new control points that are situated north of the wye with the Framingham/Worcester Line and north of North Yard. A potential platform west of the wye could also be constructed to accommodate boardings and transfers at Framingham Station.

To the north, the crossing bridge at Mount Wayte Avenue has adequate width to accommodate a second track, but a single track to accommodate both freight trains and passenger trains is proposed in this area.

The commuter rail extension will consist of improvements to the existing Fitchburg Secondary Line track structure, the signal system (or new signal system), and track-related infrastructure improvements. This work will be performed within the existing CSX right-of-way, with the exception of where the station proper ties into the parking garage on FSC property.

In the area of the FSC campus, the freight track would be relocated around a siding to be located largely on the existing track for each of the station sites, which would diverge from the main track at a wye and a control point for the station. For the Maynard Road station, approximately 900 feet of new track would be constructed, and roughly 2,200 feet of track would be relocated to provide a passing track for freight and a separate station siding. The relocated freight track would start south of Maple Street, and a new station at Maynard Road would require a grade crossing for passenger trains at Maple Street.

For the Maple Street station, provision of a passing track for freight and a station siding will require construction of roughly 980 feet of passing track for freight trains, and approximately 3,500 feet of relocated freight track. The Maple Street site will also require a new track crossing on the existing bridge over the Sudbury River, and the platform will extend south and will end before the Sudbury River Bridge.

At both sites, use of a 600-foot high-level platform that meets ADA requirements is proposed. Use of a standard platform length of 800 feet would require spanning over the Sudbury River at Maple Street site and would require significant modifications to or replacement of an embankment retaining wall at Maynard Road site. At Maple Street, a curved platform would be



needed to meet the existing track curvature. The use of a curved platform at Maple Street would require greater clearance from the platform, which would be problematic for meeting ADA gap requirements.

The total costs associated with track improvements, signalization, structural improvements, culverts/drainage, utilities, and the station are estimated to total approximately \$7.83 million at the Maynard Road site and approximately \$7.971 million at the Maple Street site. These costs do not include costs associated with parking, rolling stock, or layover facilities.

### **Parking Garage Concepts**

The proposed parking facility at each site would consist of a three-level garage structure that would be constructed over the existing parking lot. This structure would be sized to provide a total of roughly 800 spaces for FSC commuters and approximately 200 to 210 spaces for MBTA patrons at grade level. For the purposes of the study, assumptions regarding the number of parking spaces needed for the MBTA and FSC have been made. Estimates of FSC parking were based on coordination with FSC, and ridership information from the *I-290/Northborough Commuter Rail Extension Feasibility Study* was used to estimate on-site MBTA patron parking. However, the final number of parking spaces would be negotiated between MBTA and FSC.

The parking garages would segregate parking for MBTA and FSC. MBTA parking would be provided at-grade, and FSC parking would be distributed between at-grade and upper deck levels. The parking garages would provide for drop-off/pick-up areas and use of separate entry/exits for commuters and students.

The parking at the Maynard Road site would occupy approximately 80,000 square feet, with 210 spaces for MBTA commuters and 810 spaces for FSC. Access to and from the garage would be from Maynard Road. The topography and layout of the site would allow construction of a pedestrian bridge from the Maynard Road sidewalk to the upper levels of the garage between the College Chapel and the Facilities Building.

At the Maple Street, site, the garage would have a footprint of approximately 81,000 square feet and would provide 202 spaces for MBTA patrons and 795 spaces for FSC students. Access to and from the site would be off of Maple Street, and a shuttle pick-up/drop-up location may be established off Maple Street for the campus shuttle service. Alternatively, the college could elect to have the shuttle circulate through the garage as a convenience and for added security.

Costs associated with the parking garage are estimated to total approximately \$20.655 million at the Maynard Road site. A parking garage at Maple Street would cost approximately \$20.243 million.





## **Feasibility and Environmental Impacts**

### **Transit Operations**

The Fitchburg Secondary Line is owned by CSX Corporation, and presently, the MBTA has no rights over this track. The accommodation of passenger service on the Fitchburg Secondary Line would require that the yard limits for North Yard be modified, and would require new operating agreements with CSX. Conflicts with freight movements at North Yard would represent a significant operational issue, as the North Yard is one of two freight rail yards in Framingham along the Boston and Albany Line, the most heavily used freight service line in New England.

Service levels along the line would depend on the outcome of negotiations with CSX and ridership demands. Extension of the commuter rail service to Framingham State College could be accomplished through either an extension of the service along the Framingham/Worcester Line from Boston or dedicated service on the Fitchburg Secondary Line. Under current operating conditions, approximately half of the trains to Framingham Station (20 of 40 daily total trips) continue on to Worcester. If service was extended to Framingham State College, some portion of the remaining trains that do not continue on to Worcester could continue on to service Framingham State College.

Alternatively, a dedicated service could be implemented through the use of diesel multiple units, which are self-propelled and may be appropriate for shorter distances, rather than the standard push-pull locomotive-hauled coaches. The MBTA is starting to consider the use of DMUs for other portions of the transit system, and use of DMU equipment would require specialized maintenance facilities, which the MBTA does not currently have.

The third option to extend commuter rail service to FSC would be increased service to Framingham, which would continue on to service Framingham State College. This would require new operating agreements with CSX.

In addition to the potential for commuter rail service expansion to FSC, the campus is presently serviced by the LIFT bus transit system operated by the Town of Framingham, including routes between FSC and downtown Framingham. Other possible transit options include adapting this service to accommodate an intermodal FSC facility/parking garage, with or without the commuter rail extension.

The environmental impacts associated with the track improvements are summarized below:

- Implementation of commuter rail extension would not involve direct land use impacts, as track improvements would be performed within the CSX right-of-way.
- No additional grade crossings would be required, with the exception of a Maple Street grade crossing required for the Maynard Road site.



- With an existing noise level of 65 dBA, project noise in excess of 60 dBA would constitute an impact, according to Federal Transit Administration (FTA) Noise Impact Criteria. Several nearby homes would be expected to be the only noise-sensitive receptors experiencing noise levels in excess of 60 dBA.
- FTA vibration criteria identify 80 VdB as the impact threshold for residential land uses for infrequent rail events. As many as nine homes along the track are anticipated to experience vibration impacts.
- For a station site at Maple Street, the second track would cross over the Sudbury River on the existing bridge, and the platform would extend to the edge of the river. This will require work within the 200-foot riverfront protection area. Work at the Maynard Road site would require work within the 100-foot buffer zone for Baiting Brook, but would not involve alterations to resource areas.

It must be understood, however, that along with the physical and operational constraints cited above, operation of a commuter rail service on the branch will seriously impact the MBTA's main line operations and will require considerable investment in infrastructure and equipment. Extension of service to Framingham State College would not be further pursued until such time as further evaluation of service from Framingham to Leominster is undertaken.

### **Parking Garage**

Considerations for the new parking garage include additional parking capacity provided, accessibility, costs, and environmental impacts. Of the two prospective sites, the Maynard Road site would provide less additional parking capacity than the Maple Street site at a slightly higher cost. However, the Maynard Road site is more accessible than the Maple Street site and would involve lesser environmental impacts for site development.

Both sites would accommodate approximately 200 spaces for use by MBTA commuters. The Maynard Road lot now accommodates more student parking and would provide less expansion in parking for FSC students. A three-level garage at the Maynard Road lot would provide a total of approximately 1,020 spaces and a net increase of 380 spaces for FSC, since the existing lot now provides 430 spaces. A three-level garage at the Maple Street site would provide a total of approximately 997 spaces and an additional 509 spaces for FSC students, since the existing lot currently accommodates 286 spaces. Use of the Maple Street site is estimated to yield an additional 129 spaces for use by FSC students.

Development of the Maynard Road site would also be slightly more expensive. Total costs for the track, station, and parking garage (excluding rolling stock and layover facilities) would be approximately \$28.485 million at Maynard Road. This compares to approximately \$28.214 million for development of the Maple Street site.



However, the Maynard Road site would provide better site access with almost direct access from Route 9. This site is expected to generate more MBTA ridership, which would make this site more cost-effective, since the costs to upgrade the line segment between these two sites is marginal. The Maynard Road site would also be more accessible for use by FSC students, and would be the preferred option for commuter students. The existing Maynard Road lot normally fills up first, due to the proximity of the lot to the main campus. The grade differences at the Maynard Road lot can be taken advantage of to substantially reduce the impact of a parking deck on abutting properties. This grade difference can also be used to create a pedestrian walkway and reduce the uphill climb for students walking from the parking lot.

The Maynard Road site is also more compatible with this type of station/parking lot development, given its location near the FSC campus and adjoining commercial and multi-family housing developments off Route 9. This site also presents more opportunities for transit-oriented development. Station development at the Maple Street site would be less compatible with the adjoining land uses that consist primarily of residential neighborhoods along Maple Street.

Use of either site may ameliorate traffic impacts on neighborhoods affected by commuters accessing the Framingham Station in downtown Framingham. However, development of a station site on the FSC campus will require further traffic investigations to determine the impacts on local neighborhoods and already congested intersections adjoining Route 9.

Other environmental considerations for use of the Maynard Road and Maple Street sites include the following:

- Subsurface construction for a garage foundation at the Maynard Road site will encounter fly ash that was disposed of under the asphalt cap at the existing lot. Any hazardous materials encountered would be handled in accordance with applicable federal and state regulations.
- The Maynard Road lot has been previously disturbed, and development on the site is not expected to affect historical or archaeological resources. The area of the Maple Street site may be archaeologically sensitive and may have greater potential for archaeological impacts. Development at the Maple Street site would require further archaeological investigations to assess potential impacts.
- Development of the Maple Street site for a parking garage would require fill within the 100-year floodplain that adjoins the Sudbury River. This work will also occur within the 200-foot riverfront protection area.

Development of a station site/parking garage on the Maynard Road site would be more advantageous from a MBTA ridership perspective. This site would also provide more convenient access to the FSC campus and would better serve commuter students. It also appears that this site is more compatible with station site/parking garage development and would involve lesser impacts on traffic, land use, and natural and cultural resources. The Maynard Road site for a potential station site/parking garage would have the most potential to meet the needs of FSC.



## **1. Introduction**

This feasibility study examines the potential for extending commuter rail service on a spur from the MBTA Framingham/Worcester Line in downtown Framingham to a potential transit station and parking garage on the Framingham State College campus (Figure 1). The tracks and station would be located on CSX track/ right-of-way on the Fitchburg Secondary Line that currently accommodates freight service.

Commuter rail service would be extended in a northwesterly direction on this existing freight line a distance of roughly 1 to 1 ½ miles to one of two potential sites for a station and a parking garage to be located on existing parking lots owned by Framingham State College (FSC). This study examines two potential sites for a new station and parking garage structure: an existing lot at Maynard Road and Salem End Road that adjoins the FSC campus, and a southern site more remote from the main campus, an existing lot at Maple Street that is located across the CSX tracks from the Maple Street athletic complex (Figure 2). The prospective garage structure would be used to accommodate both MBTA ridership and FSC college students.

## **2. Project Context**

### **2.1. Context for Rail and Transit Improvements**

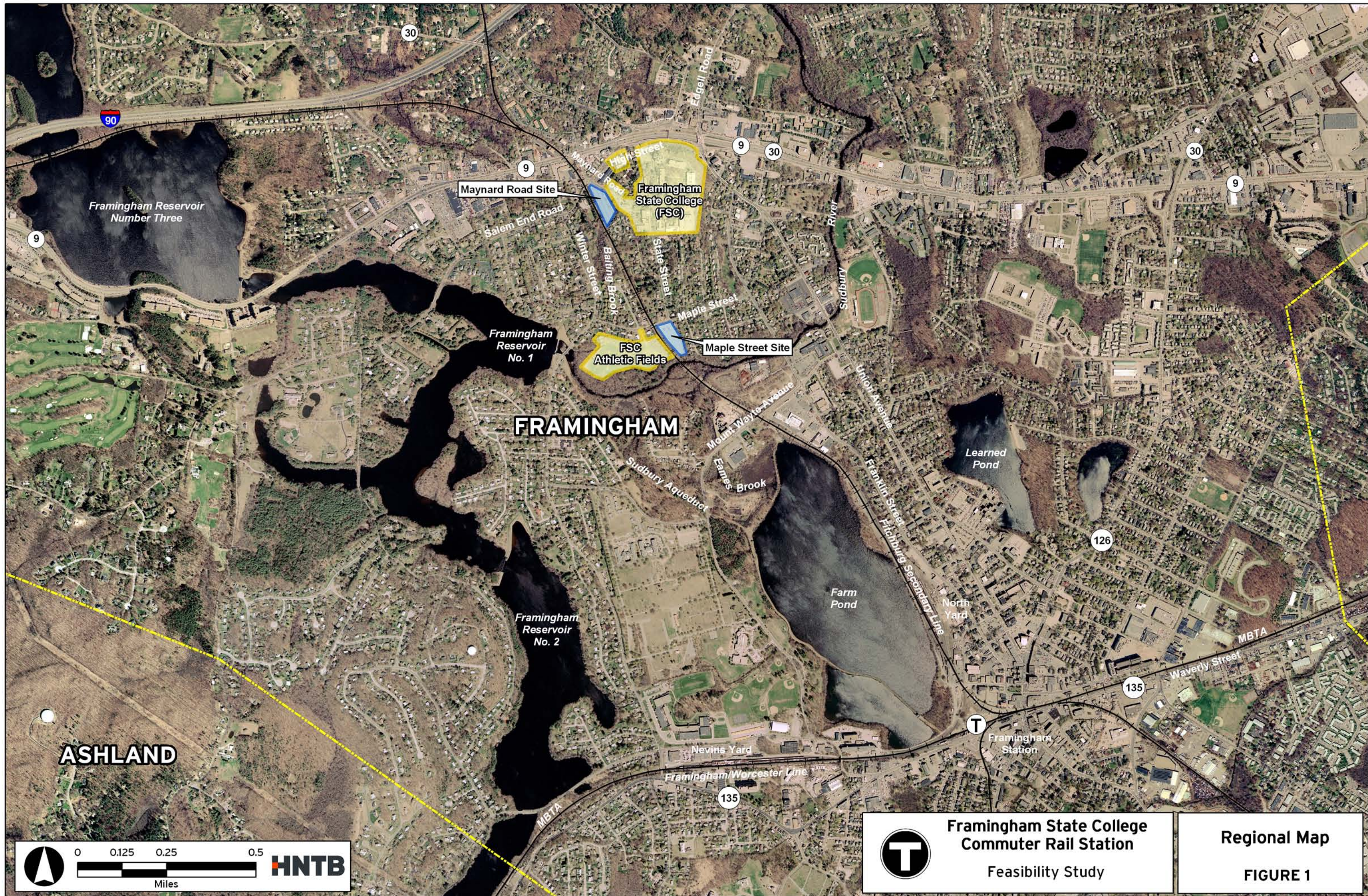
The Massachusetts Bay Transportation Authority (MBTA) operates commuter rail service on the Framingham/Worcester Line between Boston (South Station) and Worcester, with a station stop in Framingham, Massachusetts. The existing Framingham Station is located in downtown Framingham, north of Route 135 (Waverly Street) and approximately 100 yards west of the Route 126 (Concord Street) grade crossing.

CSX's Fitchburg Secondary Line branches off from the MBTA Framingham/Worcester rail line, also referred to as CSX's Boston and Albany Line, at the east end of the platform at Framingham Station. The Fitchburg Secondary Line continues northwest, extending beyond Framingham Center, Route 9, and I-290 in Northborough. Passenger service on the Fitchburg Secondary Line was last operated in 1931.

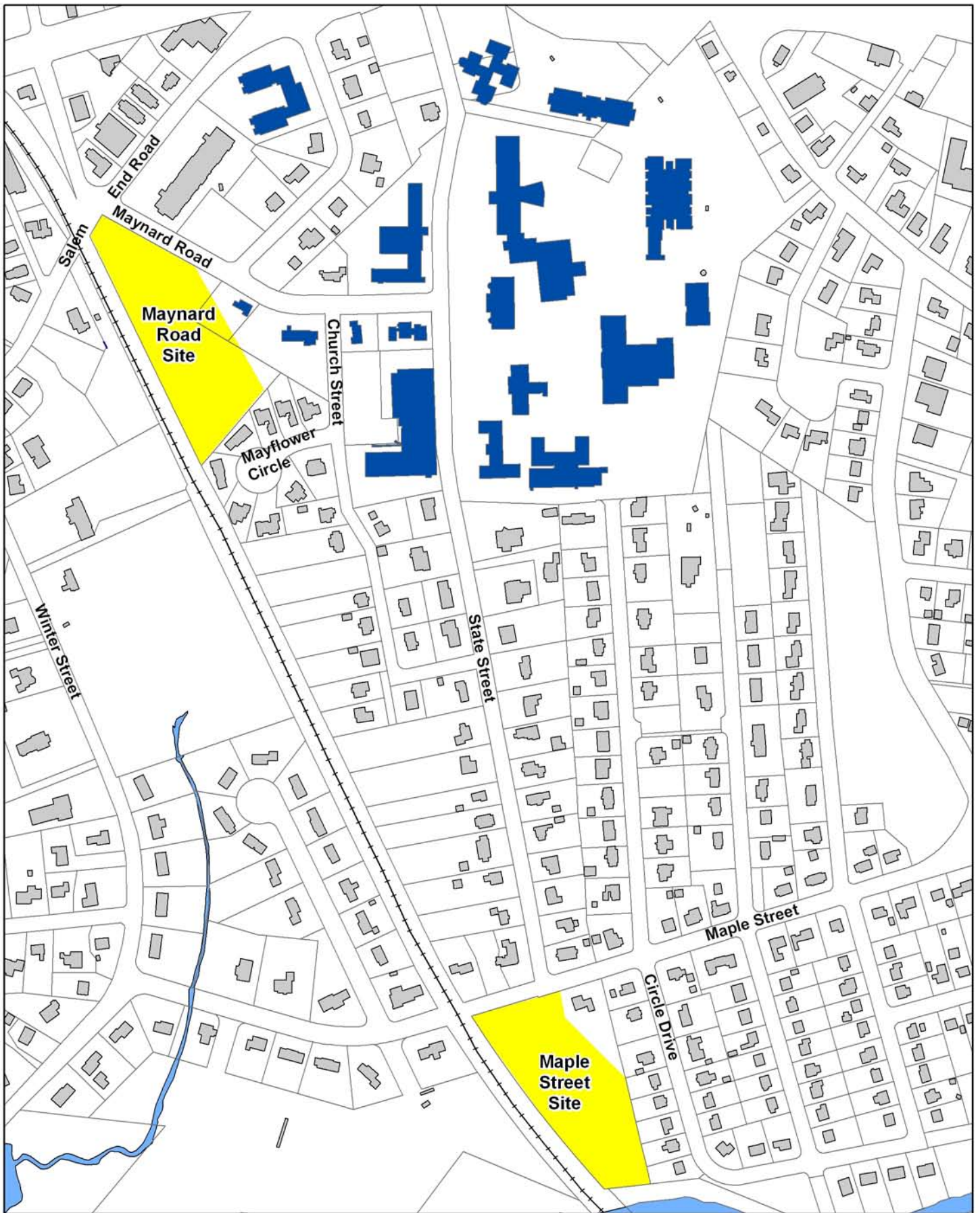
Framingham State College (FSC) campus is located approximately 1 ½ miles north of the Framingham Central Business District, and the main campus borders the east side of the CSX Corporation's Fitchburg Secondary Line, south of Route 9 (Figure 1).

This study investigated transit improvements associated with locating a new MBTA commuter rail station and parking facility in close proximity to the Framingham State College. The goal of the study was to determine the feasibility of the development of a station on one of two prospective sites and associated parking facilities.









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**Framingham State College  
Commuter Rail Station**

Feasibility Study

**Locus Map  
FSC Campus**

**FIGURE 2**



The study was conducted as a component of a larger project looking at improvements on the MBTA's Framingham/Worcester commuter rail line through addition of a third operating track near the CSX railyards in Framingham and Worcester. The goal of this overall project, entitled the MBTA Worcester Commuter Rail Service Improvement Project, is to improve midday service between Framingham and Worcester.

The Worcester Commuter Rail Service Improvement Project is part of the Program for Mass Transportation, the MBTA's central element for capital planning to the year 2025. The MBTA's vision, as defined in the PMT, is to: "provide safe, cost-effective, and efficient services that increase ridership and respond to the expanding mobility demands of individuals and communities."

The PMT also includes a future project for a *Commuter Rail Line from Framingham to Leominster*, for the potential extension of commuter rail service from Framingham to Leominster on the CSX Fitchburg Secondary Line. This commuter rail expansion would extend roughly 20 miles past the I-290 extension evaluated in 2001. The *I-290/Northborough Commuter Rail Extension Feasibility Study*, prepared by the Central Transportation Planning Staff (CTPS), examined a commuter rail extension from Framingham to Northborough on 15.7 miles of the Fitchburg Secondary Line and projected ridership for this passenger service.

In the *I-290/Northborough Commuter Rail Extension Feasibility Study*, a prospective station site was identified at Framingham State College, in Framingham Center, referred to as the Salem End Road station, at or adjacent to the Maynard Road lot. The study forecasted that ridership at this station (the furthest inbound station) would be the highest of the prospective station sites along the route. The PMT also refers to a prospective station on the FSC campus as the Framingham Center station.

Due to the proximity of the CSX rail line, the FSC approached the MBTA about joint sponsorship of a study to establish commuter rail service and to collocate an MBTA FSC Commuter Rail Station and parking facility. The parking facility would require joint use by the college and MBTA commuting patrons and would be sized to accommodate both MBTA ridership and student parking.

As part of this study, additional rail transit improvements to accommodate the extension of commuter rail service were examined along the Fitchburg Secondary Line, as a spur to the existing service on the Framingham/Worcester Line.

A new commuter rail station at FSC could pick up new ridership from neighborhoods north and northwest of Route 9, as well as FSC students. A new station at FSC may



reduce demands on the existing Framingham Station, and an expanded parking garage structure at the station would also meet demand for FSC student parking.

This conceptual feasibility study included coordination with stakeholders in establishing the study goals and objectives and determining the study area and basic planning assumptions and criteria. Two sets of public meetings and stakeholder meetings were held in Framingham and Worcester during the course of the study to obtain input from stakeholders into the project development process. These community and stakeholder meetings were jointly held for both the Framingham State College study and for the Worcester Commuter Rail Service Improvements Project.

## **2.2. Framingham State College**

Framingham State College (FSC) was founded in 1839 by Horace Mann as a female teachers college. It is now a coeducational Liberal Arts and Science College offering degrees in selected professional, arts, and science majors. Located in Framingham, the largest town in the Commonwealth, it occupies approximately 73 acres of hilltop property within the area known as Framingham Center, in the midst of a primarily residential neighborhood (Figure 2). The site overlooks Route 9 (the Worcester Turnpike) and is about 2 ½ miles from the Framingham exit off of the Massachusetts Turnpike (Interchange No.12).

In the fall of 2005, total enrollment at Framingham State College (FSC) was 6,156, with approximately 3,892 full time undergraduate students and 2,264 graduate students. Approximately 39% of FSC's full-time undergraduate students live in on-campus housing. The other 61% of students are commuters, the vast majority of which arrive by automobile. Several large student parking lots are available around the edges of the campus. Two of the larger college lots that exclusively accommodate commuter students, Maynard Road and Maple Street, are both adjacent to the existing CSX Fitchburg Secondary Line.

The Maynard Road and Maple Street lots, because of their size, adjacency to the railroad right of way, proximity to the college campus, and ownership by Framingham State College are the two sites under consideration for a new transit station/parking garage in this feasibility study.

The FSC is contending with a severe shortage of parking spacing and traffic congestion. As of 2005, FSC reported that approximately 1,500 undergraduate students live on campus, but the remaining 2,392 undergraduate students either live in off-site housing within walking distance, or commute either by automobiles or from the Framingham commuter rail station on Union Avenue. Automobile users have difficulty finding





parking spaces within two parking lots located on Maynard Road and Maple Street. The FSC provides a shuttle bus service from the parking lot at Maple Street to the campus.

The college hopes to provide 300 spaces of additional student parking at one of the two sites under consideration. This could be used by commuter students (the majority of the roughly 2,400 students living in off-campus housing) and also would obviate the need for overflow parking at Bowditch Field, which can accommodate up to 125 spaces. The college will also be able to take advantage of the proposed commuter rail station, offering a transit option for commuting students, and improved access to downtown Framingham, Worcester, and Boston for students living on campus.

### **3. Goals and Objectives**

The goals of the study included the following:

- Investigate feasibility of extending commuter rail service on the Fitchburg Secondary Line to a new commuter rail station on the Framingham State College campus,
- Investigate feasibility of constructing a station and parking garage complex on one of two prospective sites,
- Determine the feasibility of a parking garage structure to accommodate both MBTA commuters and FSC students to meet FSC parking demands.

All of the proposed station and parking developments would largely be located on lands owned by Framingham State College and CSX. Based on discussions with FSC staff, it was determined that the two favorable sites for locating the parking garage/station were existing FSC parking lots dedicated for use by commuter students located at Maynard Road and Maple Street. The footprint of these lots would be the basic footprint of any multi-level garage facility conforming to the existing lots with slight modifications. The commuter rail station would be located adjacent to the facility and along the existing rail right-of-way. The Fitchburg Secondary Line is an active freight rail line but would require some modifications, upgrades and relocations to meet the MBTA and CSX requirements for track, signaling, and safety.

The parking garage would be sized to accommodate a total of roughly 1,000 spaces at either location, for a total of 200-210 dedicated spots for MBTA commuters and an addition of either up to 380 spaces at the Maynard Road lot or 509 spaces at the Maple Street lot for FSC students. The MBTA parking demand at the prospective Framingham State College station sites was estimated using ridership information for the Framingham Center/FSC Station from the CTPS *I-290/Northborough Commuter Rail Extension Feasibility Study* (2001).



## 4. Existing Conditions

### 4.1. Existing Rail and Transit

#### 4.1.1. Overview of Rail Operations

CSX Transportation owns both the Fitchburg Secondary Line and the Framingham/Worcester Line (also known as the CSX Boston and Albany Line) in Framingham and operates trains over both of these lines. CSX dispatches passenger trains for Amtrak and the MBTA over the Framingham/Worcester Line, as well as freight service on the Boston and Albany Line, and only operates its own freight trains on the Fitchburg Secondary Line. The Boston and Albany Line is the most heavily used freight line in New England. A rail yard in Framingham, Nevins Yard, along the line west of the wye with the Fitchburg Secondary, is used for staging and assembling of freight trains.

The Fitchburg Secondary Line extends roughly 37 miles northwest from the wye with the Boston and Albany Line (Figure 3) to connect with the Fitchburg Line in Fitchburg. This segment of the Fitchburg Secondary Line extending to FSC is the oldest portion of the line and was constructed in 1849 as the Framingham Branch of the Boston and Worcester Railroad (now the Boston and Albany Line). The Fitchburg Secondary Line consists of a single-track structure, but consisted of two tracks at one time. The second track has been removed. Just north of the wye in Framingham, the line extends through North Yard, which is used by CSX for staging of trains along both freight lines (Figure 4). The line then continues north, crossing under Mount Wayte Avenue, over the Sudbury River, and crossing at grade at Maple Street and Salem End Road, before crossing Route 9.

Passenger rail service previously existed on the Fitchburg Secondary Line, and a station was located at Montwait, just north of the current site of the CSX North Yard site. Passenger service on this portion of the Fitchburg Secondary Line last operated in 1937. Commuter rail service is limited to the Framingham/Worcester Line, which meets the Fitchburg Secondary Line at the wye at Framingham Station, as shown in Figure 3. Today, only freight service operates on the Fitchburg Secondary Line with most of the service limited to the North Yard area, and one train per day going beyond this location.

The Fitchburg Secondary Line extending from the wye at Framingham Station north to Route 9 is classified by CSX as part of Framingham North Yard. For operating purposes, trains operating within yard limits cannot exceed 10 miles per hour. Trains operating within yard limits can reverse direction or switch tracks, under the authority of a dispatcher. The yard and the main freight track are used for staging and assembling of freight train sets, and currently there is no restriction to freight movements along the Fitchburg Secondary Line. The Fitchburg Secondary Line extends through the middle of North Yard, between freight yard tracks on either side. Introduction of commuter rail service along the line would present potential conflicts with this freight activity.



**Figure 3**—Photograph of the wye between the Fitchburg Secondary Line, on the left, and the Framingham/Worcester Line at Framingham Station, on the right



**Figure 4**—Photograph of North Yard, looking north



#### **4.1.2. Overview of Bus Transit**

In addition to MBTA commuter rail service, the Framingham area is serviced by the LIFT (Local Inter-Framingham Transportation) public transit system, a bus service operated by the Town of Framingham Planning and Economic Development Department. Three of the LIFT bus routes provide service from downtown Framingham to Framingham State College. This transit system also provides service to seven other MetroWest communities: Ashland, Hopkinton, Milford, Holliston, Marlborough, Southborough, and Natick. These bus routes are shown in Figure 5 and are described below:

- **LIFT 2—Downtown Framingham, MBTA Commuter Rail, Saxonville, Nobscot, Centre Common, Malls:** This bus route operates from downtown Framingham, stopping on the Framingham State College campus, before extending north to service areas north of and along Route 30 and Route 9, including the shopping malls.

On weekdays, service at FSC operates between 6:40 AM and 6:40 PM on headways of an hour, and weekend service is available on headways of an hour between 9:40 AM and 4:40 PM.

- **LIFT 5—Downtown Framingham, Ashland, Hopkinton, MBTA Commuter Rail, Framingham State College:** LIFT 5 service operates from Framingham State College to downtown Framingham, with service extending south to Ashland and Hopkinton. The LIFT 5 route has a stop on Route 135 (Waverly Street) in downtown Framingham and extends north on Franklin Street to a stop at the FSC campus. Both of the inbound and outbound LIFT 5 routes to FSC extend past the Maple Street lot.

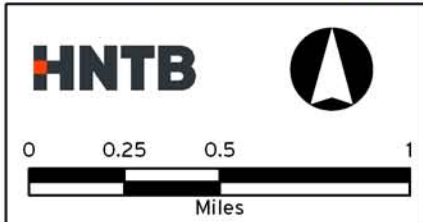
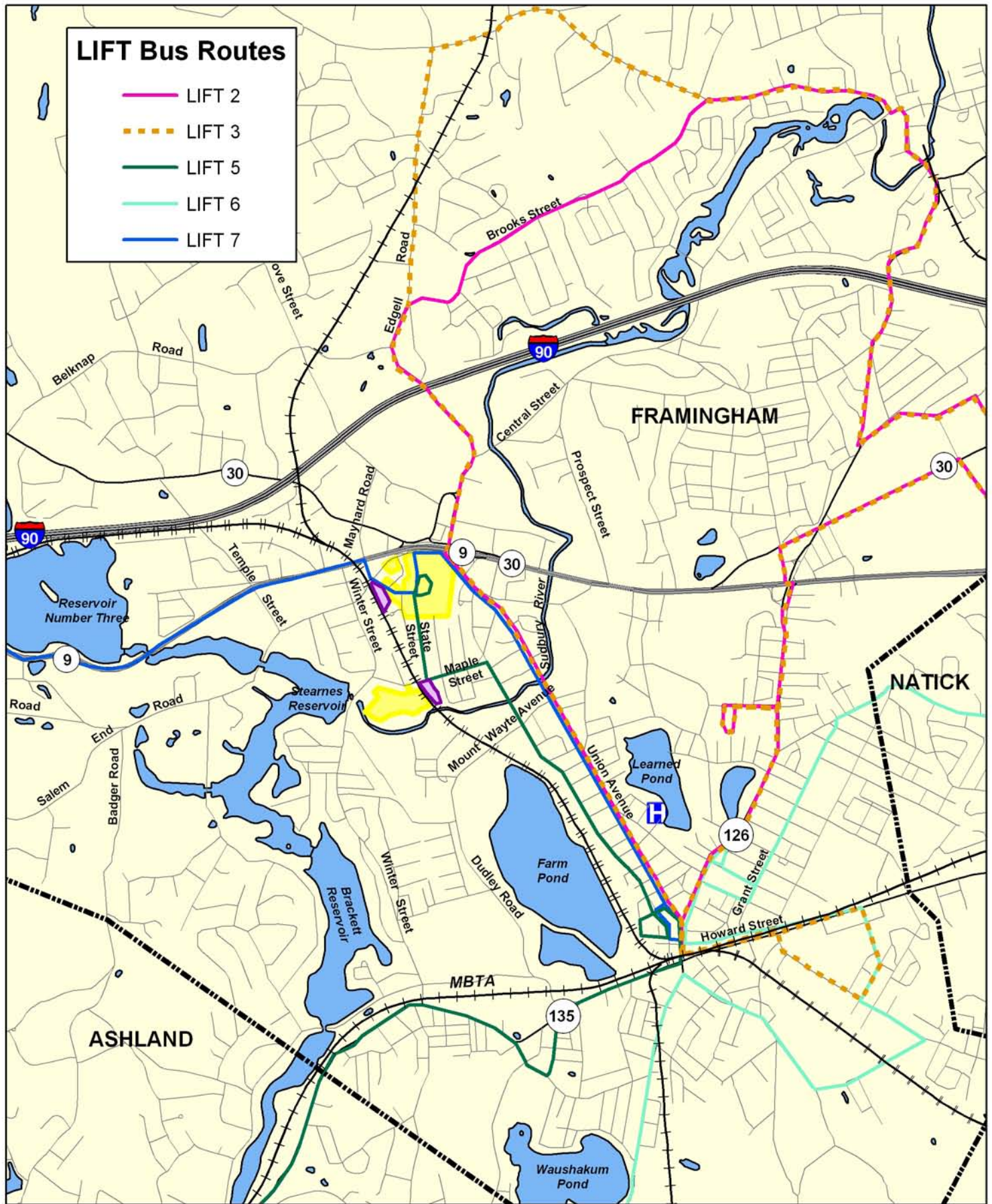
At Framingham State College, Lift 5 operates on headways of 1:20 throughout the weekday between 7:40 AM and 6:40 PM.

- **LIFT 7—Framingham, Southborough, Marlborough, MBTA Commuter Rail, Solomon Pond Mall:** LIFT 7 Service runs north from a downtown Framingham stop and runs along Union Avenue to FSC, eventually terminating at I-290 (Solomon Pond Mall). On the inbound route to Framingham, LIFT 7 runs past the Maynard Road lot to the FSC campus and south back to downtown Framingham.

At Framingham State College, LIFT 7 operates on weekdays on headways of an hour between 7:20 AM and 10:20 AM and between 2:20 PM and 7:20 PM, with one midday stop at 12:20 PM.

Several LIFT routes were suspended in 2004, but ridership is reported to be on the increase. Ridership was reported by the Town of Framingham to total approximately 49,000 through July, August, and September, an increase from previous years.







**Framingham State College  
Commuter Rail Station**

Feasibility Study

**Public  
Transportation**

**FIGURE 5**



## 4.2. Framingham State College Parking

### 4.2.1. General Description

The college currently accommodates parking for commuter and resident students in several lots. Discussions with Mike Hinckley, FSC Director of Facilities on August 18, 2005 indicated that, in addition to the Maple Street and Maynard Road lots, the student parking for undergraduates at FSC consists of the following:

- **Union Avenue lot** at the intersections of River Street and Wood Terrace accommodates 427 spaces. This is a former auto dealership that the college purchased 10 years ago. This parking is reserved for resident hall students, who pay \$500 per year to park. This site is more than a mile north of the Framingham Station stop along the Framingham/Worcester Line, which is situated off Union Avenue in downtown Framingham.
- **Adam Road lot**, which extends off of Maynard Road to Route 9, accommodates 34 spaces for commuter students.
- **Maple Field 1 lot**, adjoining the eastern side of the FSC athletic fields, accommodates 136 spaces for resident students.
- **Maple Field 2 lot**, which is closer to the FSC athletic fields and was converted from tennis/basketball courts, accommodates 87 spaces.
- **Bowditch Field**, located off Walnut Street, accommodates commuter overflow parking. This can accommodate 125 spaces.
- **The Maple Street and Maynard Road lots** are first-come/first-serve for commuter students.

Parking areas dedicated for use faculty/staff, graduate students, and undergraduates is described in the 2005 FSC Parking Rules and Regulations. It should be noted that this FSC publication describes designated student parking in the first two rows of the Church Street lot, adjacent to the Ecumenical Center. At the time of the August 2005 site visit, this parking was occupied by construction workers performing work at the College Center.

### 4.2.2. Description of Maynard Road Parking Lot Site

The Maynard Road lot, on roughly 3.2 acres, virtually borders the main campus and accommodates 430 spaces (Figure 6). Salem End Road, on the northwest, and Maynard Road, on the northeast, intersect at the northern corner of the lot. The lot is also





bounded on the southeast and south by properties fronting on Church Street and Mayflower Circle and on the southwest by the CSX track.

The Maynard Road lot is close to FSC facilities immediately to the east on Church Street, including College Center. However, the grade level of the parking lot is substantially lower than the academic areas of the campus. Maynard Road climbs more than 30 feet from the parking lot entry to the intersection with State Street, beyond which the academic buildings are located. The hike up the hill can be daunting for those carry significant loads of textbooks or other school materials.

This topography presents some interesting possibilities for a potential garage structure on the site. The existing parking lot at its southeast corner is estimated to be 15 to 20 feet below the grade of adjacent properties. A multi-level garage structure set in this location will still be of a reasonable scale in relation to adjacent buildings. The college chapel and the two story homes along Mayflower Circle will not be overwhelmed by a looming, taller, more massive structure on the property next door.

The Adams Road lot is located immediately north of the site.



**Figure 6**—Photograph of the Maynard Road lot, looking southeast



The Maynard Road lot is within a block of Route 9. It can be easily accessed to/from the eastbound lane of Route 9 at the intersection of Maynard Road. Connection with westbound Route 9 is considerably more difficult. Traffic must use either the interchange at Main Street/Edgell Road to the east using Salem End Road, or further west using the Temple Street intersection. The westerly end of Salem End Road passes through some well-established residential neighborhoods.

#### **4.2.3. Description of Maple Street Parking Lot Site**

This lot is located at the southerly end of State Street, where it intersects with Maple Street and accommodates 286 spaces (Figure 7). It is approximately ½ mile from the main academic campus, with access to the campus provided by State Street. Property to the west, on the other side of the railroad right of way, includes FSC athletic fields. To the south are undeveloped lands owned by the Massachusetts Department of Conservation and Recreation Division of Water Supply Protection adjacent to the Sudbury River to the south. The remaining areas to the north and east are residential neighborhoods.

The Maple Street property is a roughly triangular shaped site of approximately 3 acres. The site slopes gently (approximately 15 foot vertical drop over 500 feet horizontal - a 3% grade) down from Maple Street to the south.



**Figure 7**—Photograph of the Maple Street lot, looking south





FSC operates a continuous shuttle service for students parking in the Maple Street lot. FSC records indicate that the college utilizes this lot for 286 student parking spaces. The location of this site further from Route 9 than the Maynard Road lot will require more travel through residential neighborhoods for the utilization of this site as a proposed station/parking facility.

### **4.3. Traffic and Parking**

#### **4.3.1. Grade Crossings along Fitchburg Secondary Line**

Since the Fitchburg Secondary Line extends along the east side of Farm Pond over a distance of roughly 1 mile, reactivation of passenger service along this line would have potential effects at up to one existing grade crossing for use of the Maynard Road site. North of Farm Pond, the CSX track crosses under Mount Wayte Avenue at an underpass (Figure 8). The line also crosses Maple Street and Salem End Road to the north, adjacent to the potential station sites under evaluation. Since the majority of traffic generation impacts associated with station/parking garage development will occur at the prospective station sites, a detailed discussion of the potential Maynard Road and Maple Street sites is presented below.



**Figure 8**—Photograph of the Mount Wayte Avenue overpass, looking north



#### 4.3.2. Traffic and Parking at the Maynard Road Site

##### 4.3.2.1. Geometry

The Maynard Road lot is a paved bituminous parking lot containing 430 spaces. The lot lies on the southwest corner of the intersection between Salem End Road and Maynard Road. The entrance to the lot is along the eastbound direction of Maynard Road less than 100 feet from the intersection with Salem End Road. The intersection of Salem End Road and Maynard Road is a four-way unsignalized intersection. All movements from Maynard Road are controlled by stop signs. There is an existing at-grade railroad crossing on Salem End Road west of the parking lot. On-street parking is permitted along the westbound direction of Maynard Road. Sidewalk exists along both directions of Maynard Road between the parking lot and State Street. Maynard Road experiences high volumes of pedestrian traffic from the lot into the campus of Framingham State College. Of the two sites being considered, this lot is the preferred lot of commuter students and faculty, filling first during the morning peak hour. The preference for use of this parking lot primarily relates to the proximity of the lot to Framingham State College buildings, as well as to Route 9.

##### 4.3.2.2. Existing Site Access and Affected Intersections

The main access paths to the Maynard Road site are:

- From Route 9 eastbound, Maynard Road;
- From Route 9 westbound and points north of Route 9, the Main Street/Edgell Road overpass to Salem End Road via High Street; and
- From points south, Winter Street.

The following sections describe major intersections that could be affected by increased traffic demand to this site.

- **Main Street/Edgell Road Overpass:** The Main Street/Edgell Road overpass is a heavily traveled interchange between Route 9 and the surrounding area. The entrance/exit ramps from Route 9 westbound meet Edgell Road to form a signalized intersection just to the north of Route 9. High Street and the entrance ramp to Route 9 eastbound meet with Main Street to form a signalized intersection south of Route 9. In 2002 there were fourteen recorded accidents at the intersection of the Route 9 westbound ramps and Edgell Road, and there were nineteen accidents at the intersection of the Route 9 eastbound ramp, High Street and Main Street.
- **High Street, Salem End Road, State Street, and the Route 9 Eastbound Exit Ramp:** The intersection of High Street, Salem End Road and State Street is located at



the end of the Route 9 eastbound off-ramp. Exiting traffic from Route 9 merges onto the eastbound lane of High Street. High Street is a two-way roadway which extends from the Route 9 off-ramp to Main Street. The westbound travel lane of High Street is a left-turn only lane onto either State Street or Salem End Road and traffic from this lane is forced across the Route 9 off-ramp traffic. The left turn movement is controlled by a stop sign. In 2002 this intersection experienced six accidents.

- **Winter Street and Salem End Road:** The intersection of Winter Street and Salem End Road is a four-way, signalized intersection. The signal is controlled by two phases with no signalized protection for any turning movements. There is a right-turn only lane separated by a traffic island on the Winter Street northbound lane. This intersection already experiences delays during peak hours. In 2002, this intersection experienced two accidents.
- **Salem End Road and Maynard Road:** The intersection of Salem End Road and Maynard Road is a four-way unsignalized intersection. Both Maynard Road approaches are controlled by stop signs. There are sidewalks along both direction of Maynard Road south of the intersection. There were no accidents recorded in 2002 at this intersection.
- **Winter Street/Maynard Road and Route 9:** Increasing demand for this site may also affect the right-turn movements from Route 9 onto Winter Street and Maynard Road. Route 9 is a divided highway, and right turns are permitted from the eastbound direction onto Winter Street and Maynard Road. Right turns are also permitted from the side streets onto Route 9 eastbound. In 2002, there was one accident at the intersection of Route 9 and Winter Street, and there were two accidents involving the right turn onto Maynard Road from Route 9.

#### 4.3.2.3. Traffic Counts

There is limited traffic count data available attained from a VHB memorandum entitled *State Street Traffic, Parking and Pedestrian Study*, dated July 29, 2003. Average daily vehicle counts were provided in the report for Maynard Road at the intersection of State Street. The report showed daily traffic volumes on Maynard Road, south of State Street, between 2,600 vehicles per day (vpd) and 3,200 vpd, and, from these numbers, extrapolated peak hour volumes on Maynard Road at between 210 vehicles per hour (vph) and 320 vph.

MassHighway Department (MHD) traffic counts for the section of Salem End Road in the study area, east of Mayhew Street (immediately west of Maynard Road), totaled 13,800 vehicles per day in 2001. MHD counts taken in 2002 for Route 9, west of Main Street, indicated that average daily traffic totaled 58,800 vehicles per day.



#### 4.3.3. Traffic and Parking at the Maple Street Site

##### 4.3.3.1. Geometry

The Maple Street parking lot is a paved bituminous parking lot containing 286 spaces. The main entrance to the Maple Street parking lot is situated so that a four-way, unsignalized intersection is created between the entrance, State Street, and both directions of Main Street. The exiting movements from the parking lot entrance and State Street are controlled by stop signs. A second entrance to the lot exists along Maple Street west of State Street. There is an existing at-grade railroad crossing on Maple Street to the west of the secondary entrance. Sidewalk exists along the northbound direction of State Street, along the westbound direction of Maple Street east of State Street, and along both sides of Maple Street west of the State Street intersection. Pedestrian traffic is heavy along State Street from the Maple Street parking lot to Framingham State College. There is also a shuttle service from the Maple Street lot to Framingham State College. The land abutting the parking lot is primarily residential, and adjoining residential streets are signed indicating that on-street parking is restricted to residents.

##### 4.3.3.2. Existing Site Access and Affected Intersections

The main access paths to the Maple Street site are:

- From Route 9 eastbound, Winter Street and State Street;
- From Route 9 westbound and points north of Route 9, Main Street to Franklin Street or State Street;
- From points south, Winter Street or Franklin Street.

There are several main intersections that could be affected. The following sections describe major intersections that could be affected by an increase in traffic demand to this site. The Main Street/Edgell Road Overpass, Winter Street and Salem End Road intersection, and High Street access path were described in section 2.1.3.

**Main Street and Franklin Street:** The Intersection of Main Street and Franklin Street is a three-way unsignalized intersection. The movements from Franklin Street are controlled by a stop sign. Main Street and Franklin Street are both heavily traveled roadways. In 2002 this intersection experienced fifteen accidents.

**Maple Street and Franklin Street:** The intersection of Maple Street and Franklin Street is a four-way unsignalized intersection. There is a traffic island which splits the eastbound approach of Maple Street into two separate approaches. Vehicles traveling along Maple Street can experience delays when attempting to cross Franklin Street during peak hours. The 2002 crash data reveals five incidents at the intersection of Maple Street and Franklin



Street. All accidents involved two cars and seemed to involve one car on Maple Street and one car from Franklin Street

**Winter Street and Maple Street:** The intersection of Winter Street and Maple Street is a three-way unsignalized intersection. The Maple Street approach is controlled by a stop sign. Sidewalk exists along the westbound direction of Maple Street and continues along the northbound direction of Winter Street. There were two accidents in 2002 in this intersection or in the vicinity.

**State Street and Maple Street:** The intersection of State Street and Maple Street is a four-way unsignalized intersection with the southbound approach being an entrance to the Maple Street Parking lot. The approaches from the parking lot and from State Street are controlled by stop signs. There is sidewalk along the northbound direction of State Street, along the westbound direction of Maple Street west of the intersection, and along both directions of Maple Street east of the intersection. The 2002 crash data reveals two incidents at or near the intersection of State Street and Maple Street.

#### 4.3.3.3. Traffic Counts

The Massachusetts Highway Department website has an average daily traffic count number dated 2001 for Maple Street. This count was taken just west of State Street, and had a value of 9,400 vpd. No other counts were available for State Street or the Maple Street parking lot.

## 4.4. Land Use and Zoning

### 4.4.1. Land Uses along the Fitchburg Secondary Line

The land uses in the vicinity of the Fitchburg Secondary Line and the CSX North Yard in downtown Framingham consist of industrial and commercial uses in the Framingham Central Business District, east of Farm Pond. The track is buffered from adjoining land uses by commuter parking along the track near the wye with the Framingham-Worcester Line and by the CSX North Yard to the north. To the north of the CSX North Yard, adjoining uses include residences along Franklin Street, which extends along the CSX track where it extends along the northeast side of Farm Pond.

On the north side of Farm Pond, the west side of the track adjoins Massachusetts Department of Conservation and Recreation (MDCR) property, including an access road and parking area adjoining the pond (Figure 9). North of Farm Pond, the track extends through a light manufacturing zone with industrial uses where it crosses Mount Wayte Avenue and extends north to the Sudbury River. North of Mount Wayte Avenue, the west side of the Fitchburg Secondary Line adjoins property owned by the Framingham



Sanitation Department that houses a recycling center and a former incinerator facility. Review of the Framingham Assessor's database indicates that the adjoining property to the north is town-owned, and land east of the CSX line and north of Mount Wayte Avenue is owned by Perini Corporation.

The MDCR Division of Water Supply Protection owns lands adjoining the Sudbury River, which is a downstream tributary to Stearnes Reservoir (Framingham Reservoir No. 1). Stearnes Reservoir is part of the Framingham Reservoir system, but is not held on reserve by the Massachusetts Water Resources Authority as an emergency water supply source. North of the Sudbury River are the Maple Street site and the southern edge of the FSC campus. The land uses between the section of track between Maple Street to the south and Maynard Road to the north consist predominantly of residential uses, and land uses adjoining the prospective station/parking garage sites are described below.

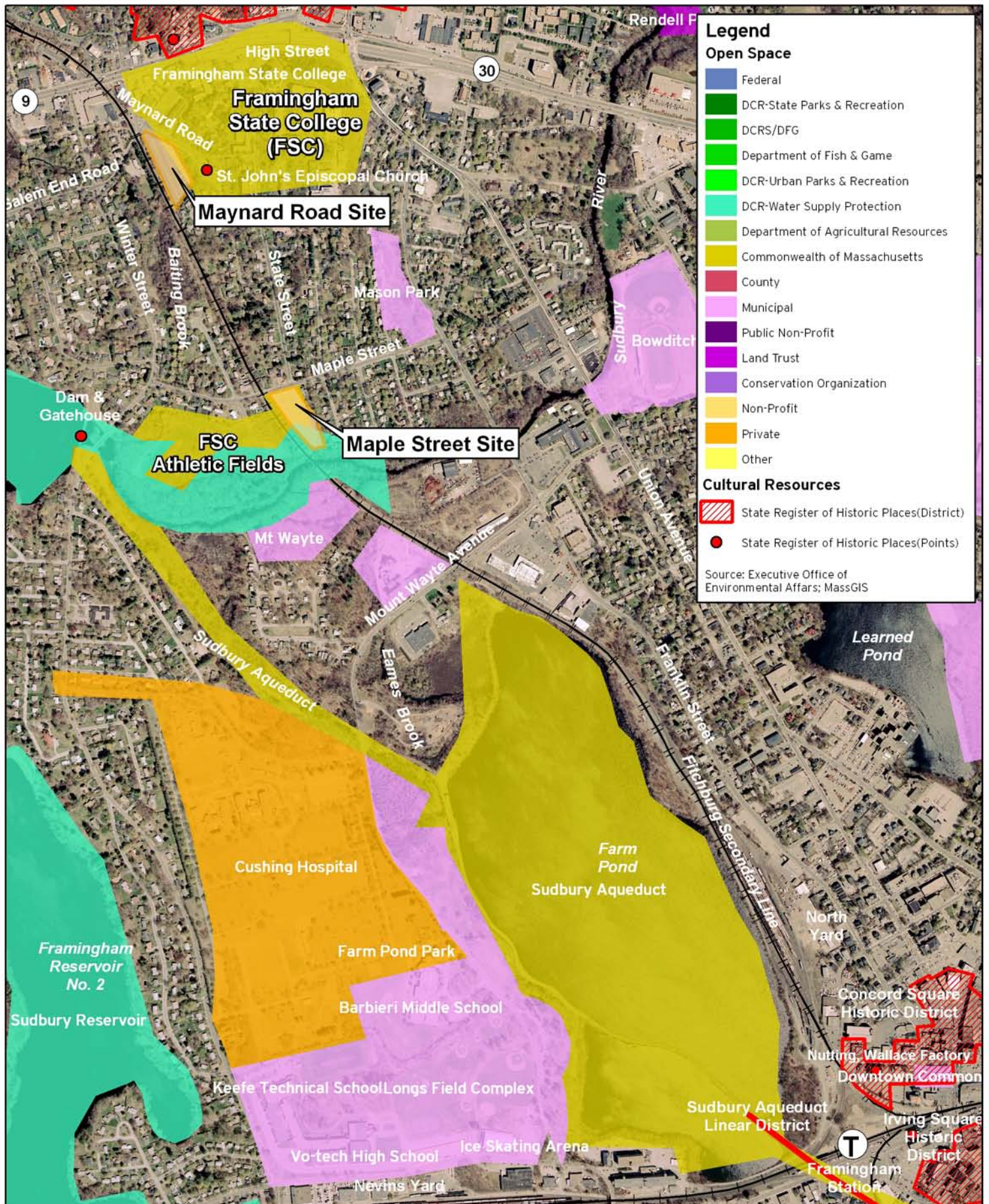
#### **4.4.2. Land Uses at the Maynard Road Site**

The existing use of the site is as a parking lot for FSC commuter students, and uses bordering the east side are FSC facilities, including the Adams Road lot situated north across Maynard Road. The Maynard Road lot directly adjoins the FSC Department of Facilities building that fronts on Maynard Road, to the northeast, and the college chapel, which is situated on Church Street to the southeast and is above the grade of the existing parking lot (Figure 10). Other adjoining properties include the Salem House Apartment, to the north, and commercial uses are located to the northwest off of Route 9. West of the CSX track is the Combined Jewish Philanthropies building on Salem End Road, which also houses the MetroWest Jewish Community Center and the Jewish Reporter. To the south of the existing parking lot are five residences along Mayflower Circle.

#### **4.4.3. Land Uses at the Maple Street Site**

The existing use of the Maple Street lot is for parking for FSC commuter students. At the Maple Street site, eight single-family residential houses line Circle Drive along the east side property line – the closest and most sensitive receptors (Figure 11). Houses also line Maple Street, on the north side, across from the site and extending up the hill on both sides of State Street to the main campus. Across from the CSX track on the west side are several more houses and FSC athletic fields that include bleachers, a football/soccer field, and track and two small parking lots used for FSC students.





**HNTB**

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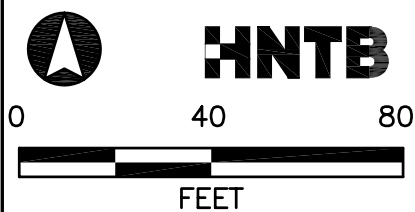
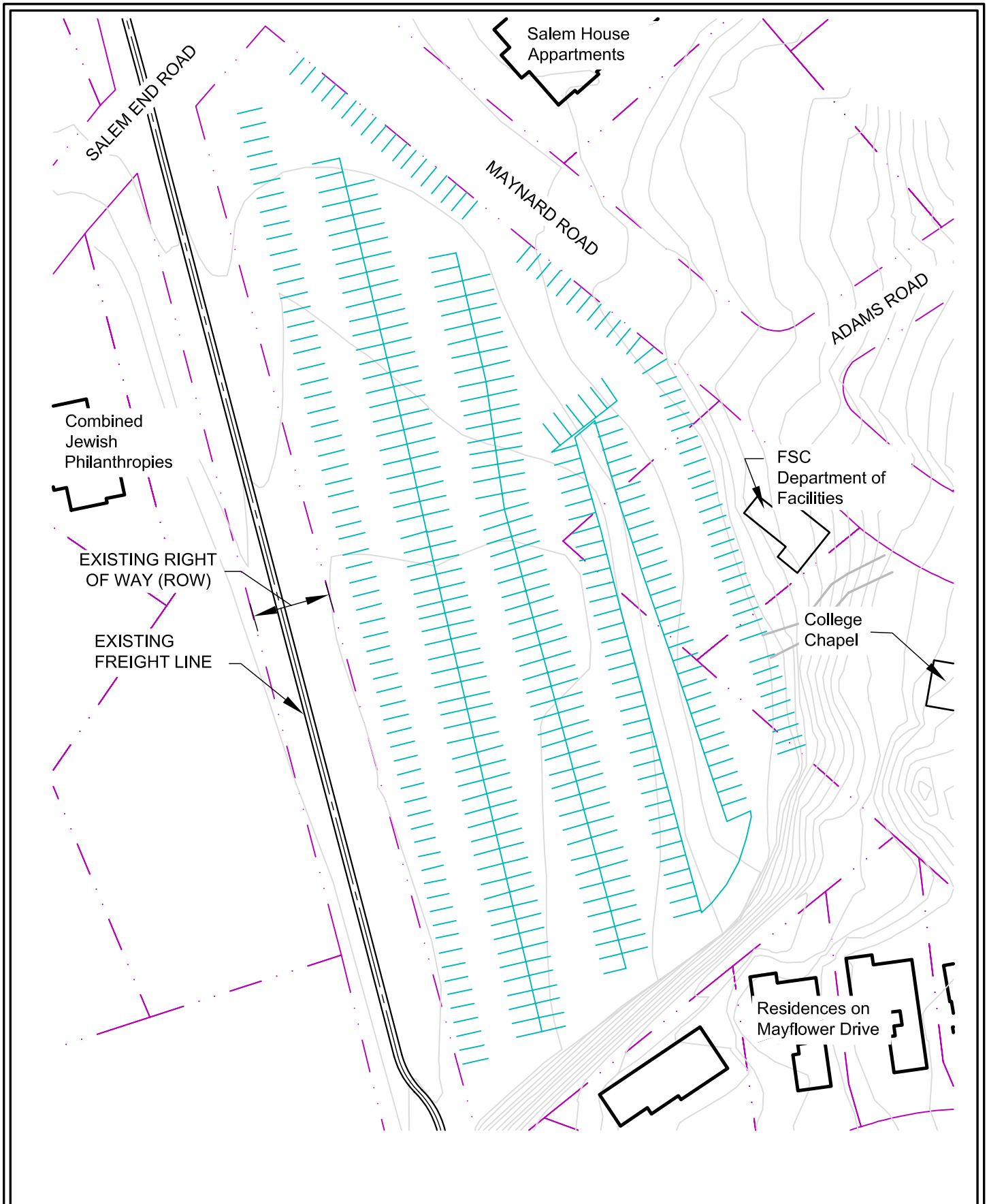
**Framingham State College  
Commuter Rail Station**

**Feasibility Study**

**Open Space &  
Cultural Resources**

**FIGURE 9**

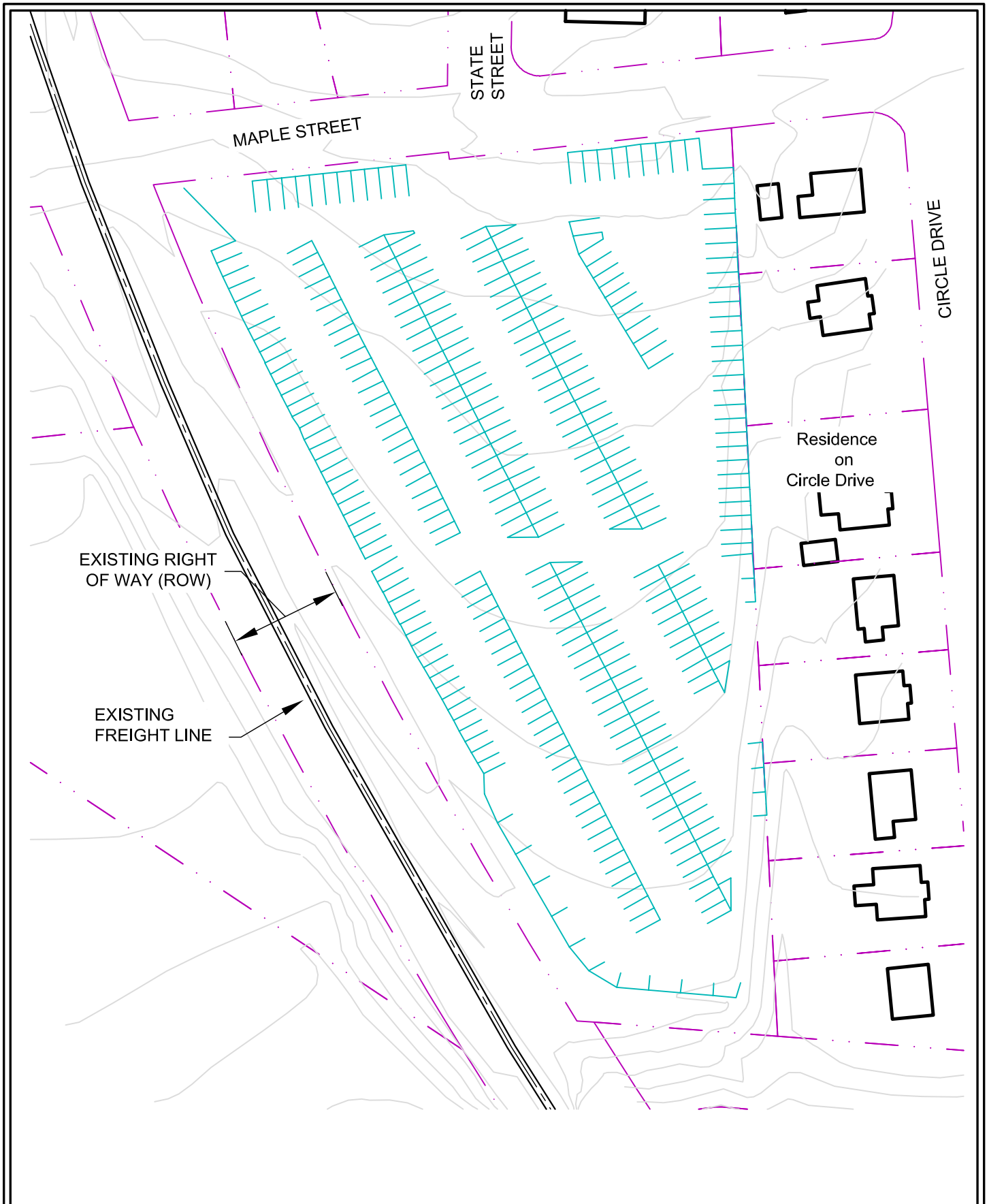




**Framingham State College  
Commuter Rail Station  
Feasibility Study**

**Existing Site  
Maynard Road  
FIGURE 10**





**HNTB**

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Framingham State College  
Commuter Rail Station  
Feasibility Study

Existing Site  
Maple Street  
**FIGURE 11**



To the south are undeveloped wooded lands along the Sudbury River that are owned by the Massachusetts Department of Conservation and Recreation Division of Water Supply Protection. Review of MassGIS open space layer shows the MDCR parcel ownership extending to the southern portion of the Maple Street lot; however, the Framingham assessor's database shows exclusive ownership of the parcel by FSC.

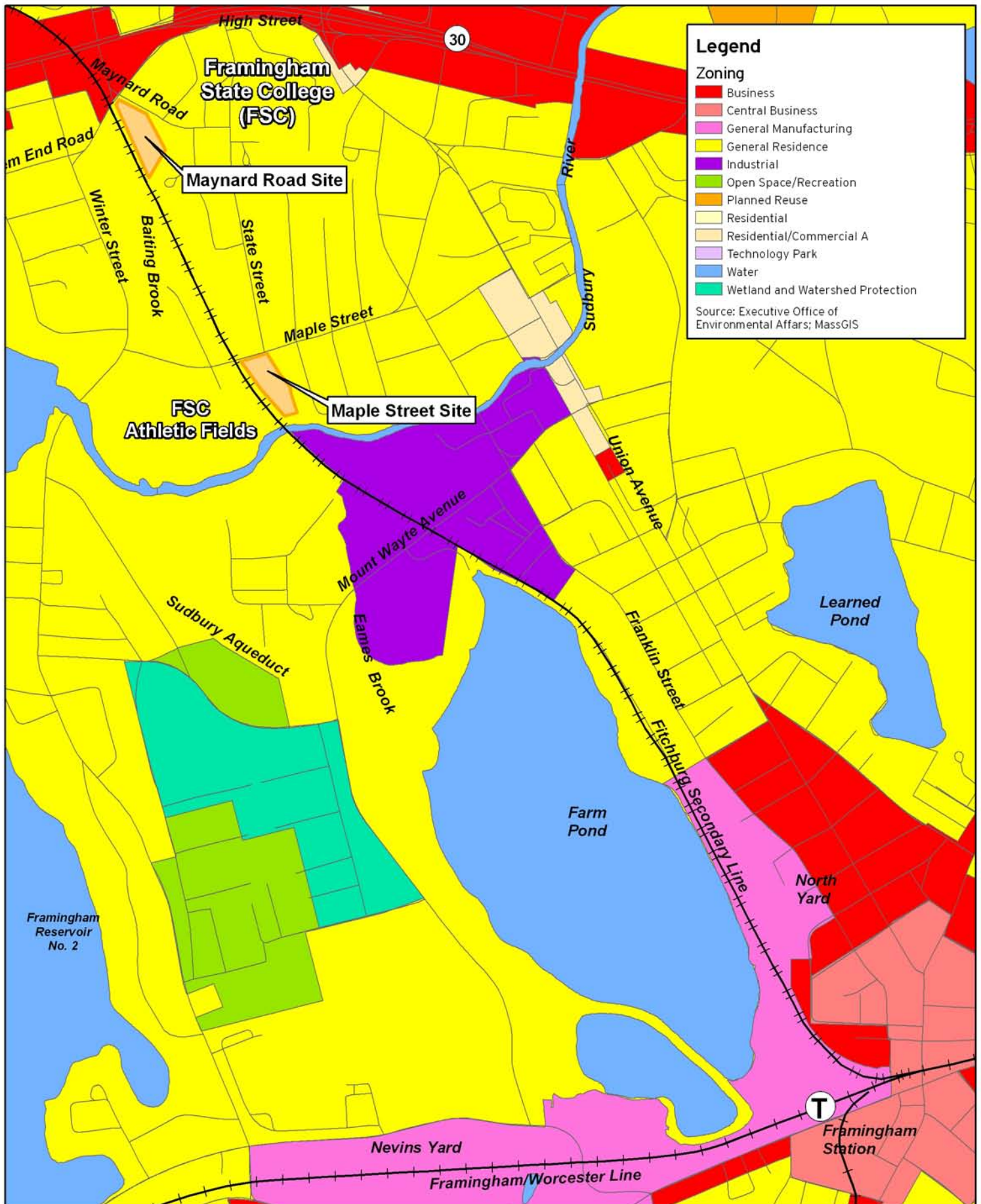
#### 4.4.4. Zoning

The zoning classifications in the study area are shown in Figure 12. In downtown Framingham, the CSX track extends through areas zoned for general industrial and general business uses. To the north, and south of the Maple Street site, the Fitchburg Secondary Line extends through areas that are zoned for single-family residential use and for light manufacturing.

Both of the prospective station/parking sites at the Maynard Road and Maple Street lots are situated within areas zoned as single-family (R-1, 8,000 s.f. lots) residential use. State Street, between the main campus/Maynard Road lot and Maple Street, also runs through a single family residential (R-1, 8000 s.f. lots) zoned neighborhood.

These zoning classifications are described below:

- **Single Family Residential (8,000 sq ft)**—The Single Family zoning district (8,000 sq ft) is located throughout the majority of the study area, and comprises the majority of the area surrounding the FSC main campus. This zoning district allows for a detached dwelling for one family, with the same provisions as that mentioned above, only the size of the lot is smaller than that as mentioned above.
- **General Business:** The General Business district zoning occupies areas north of the wye in downtown Framingham and north of FSC campus, along Route 9. This district encourages compact commercial centers and commercial strip development served primarily by automobiles. Shared-access driveways are encouraged. Drive-thru facilities associated with any commercial or retail business use, fast food establishments, automatic and self service carwashes, outdoor entertainment facilities and hotel/motels are allowed in this district with a special permit.
- **Light Manufacturing:** The Light Manufacturing district is located south of Maple Street lot, adjacent to the CSX rail line south of the Sudbury River. This district allows for non-residential uses, including; laboratories, research, and the manufacturing of clothing, electrical appliances, food products, leather goods, machinery parts and accessories. Additional uses allowed in this district include bottling works, stone or monument works, and municipal sewage treatment plants.



**HNTB**

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Feet



**Framingham State College  
Commuter Rail Station**

**Feasibility Study**

**Zoning**

**FIGURE 12**



- **General Industrial (Manufacturing):** The General Industrial (or General Manufacturing) District is located adjoining the wye in the Framingham downtown area. This district non-residential use permissible in light manufacturing districts, including wholesale lumber, fuel, and oil manufacturing establishments, and manufacturing of any description utilizing processes free from neighborhood disturbing odors and/or agencies.

#### 4.4.5. Proposed Developments

Proposed developments in the area were identified through review of the *2006-2010 Transportation Improvement Program* (endorsed August 2005), review of Framingham planning documents, and coordination with the Framingham Planning Department. Proposed transportation improvements and developments in the Framingham downtown area include the following major developments:

- **Route 126/Route 135 Underpass:** This project is identified in the 2006-2010 Transportation Improvement Program (TIP) as a MetroWest Priority project and involves routing Route 126 under Route 135 and the CSX Framingham/Worcester Line for pass through. This is being undertaken as part of a separate project to alleviate traffic queuing and severe congestion that occurs in downtown Framingham at the intersection of these two major arterials in the heart of the downtown area. One lane of Route 126 would be left at-grade to maintain access to the downtown commercial district.
- **Arcade Building Redevelopment:** Framingham Acquisition, LLC owns one of the largest downtown properties, known as the “Arcade” Building, which fronts on Memorial Square. The site is bounded by Route 126 (Concord Street) at the intersection with Union Street, across from the Framingham Town Hall. This property currently includes 76 businesses and four historic buildings. This \$50 million redevelopment will consist of mixed-use project, with retail, commercial, and residential space on 400,000 square feet. The project includes streetscape improvements, rehabilitation of historic buildings (totaling approximately 70,000 square feet), 290 new apartments, and construction of approximately 50,000 square feet of new commercial space. The project will promote mixed-use development near the Framingham MBTA Station and the LIFT bus system.

#### 4.5. Noise and Vibration

Although the existing CSX track currently accommodates freight service, a site survey to identify noise-sensitive receptors and land uses was performed, along with noise monitoring at selected locations. The survey identified 32 residential properties within approximately 200 feet of the proposed FSC line (with some as close as 34 feet). These





residential properties were located on Franklin Street, Maple Street, Maple Lane, Church Street, Mayflower Circle, Mayhew Street, and Salem End Road. The majority of the residences were single-family homes, with a few multiple family structures. Some institutional buildings on the FSC campus are within the general area, but probably not close enough to experience impact levels.

The noise metric used for this study is the A-weighted decibel (abbreviated dBA), which takes into account the frequency response of human hearing. For residential land uses, the 24-hour Day-Night Noise Level metric (abbreviated Ldn) is used for impact assessment. This metric represents the 24-hour equivalent noise level with a 10 decibel penalty for noise during nighttime hours (10 PM to 7 AM).

Predicted noise levels of the limited existing freight rail service on the Fitchburg line suggests that the limited existing rail activity is not the current dominant noise source for receivers in this area. Actual noise measurements that were taken in the study area indicate that existing noise levels in this area may range up to 65 dBA Ldn. The table below presents typical noise levels for ordinary activities as a reference.

**Table 1—Common Analogies for dBA Sound Pressure Levels**

<b>Common Sound Environment</b>	<b>Sound Pressure Level (dBA)</b>
Threshold of pain	120
Airport runway	110
Typical nightclub	100
OSHA limit for 8-hour exposure	90
Construction area	80
Area near a major highway	70
Urban area during day	60
Quiet suburban area during day	50
Quiet suburban area at night	40
Quiet rural area at night	30
Inside broadcast studio	20
Inside audiometric booth	10
Threshold of hearing	0



## **4.6. Natural Resources**

The natural resources inventory performed for this conceptual feasibility study evaluated water resources, aquifer recharge/groundwater protection, geology and soils, prime farmlands, floodplains, wetland resource areas, and endangered and threatened species. The following summarizes the results of the evaluation of each natural resource category.

### **4.6.1. Water Resources**

The project area is within the Sudbury River watershed and extends proximal to the river and its tributaries. The CSX track extends along the east side of Farm Pond, north of downtown Framingham, over a distance of roughly 1 mile. North of Farm Pond, the CSX track extends adjacent to and east of Eames Brook, a tributary of the Sudbury River that flows into Farm Pond, before the track extends north over the Sudbury River (Figure 13).

The Sudbury River is a downstream tributary to Stearnes Reservoir (Reservoir No. 1), and the reservoir outlet is located within roughly 1,600 feet of the CSX crossing and Maple Street lot. Stearnes Reservoir releases water into the Sudbury River and is downstream of emergency water supplies within the Framingham Reservoir system. However, Stearnes Reservoir is classified as Class B and is not held on reserve as a drinking water supply source. Roughly 4 miles downstream, the section of the Sudbury River extending south to join the Concord and Assabet Rivers is part of the designation of the Sudbury, Assabet, and Concord Rivers as a National Wild and Scenic River.



**Figure 13**—Photograph of the Sudbury River Bridge, looking north



The southernmost edge of the Maple Street parking lot site is situated within approximately 100 feet north of the Sudbury River crossing. The Maynard Road site is located on the opposite side of the CSX track from another tributary of the Sudbury River, Baiting Brook.

#### **4.6.2. Aquifer Recharge/Groundwater Protection**

Existing data were used to determine whether the project area is situated in an aquifer recharge area or if public drinking water supplies are located within 500 feet of the project area. Data reviewed for this issue included the Massachusetts Geographic Information System (MassGIS).

The Massachusetts Geographic Information System Aquifers Datalayer (1997) indicates that the southern half of the project area, from the wye north of Route 135 (Waverly Street) to Mount Wayte Avenue, just north of Farm Pond, is situated within a medium-yield aquifer recharge area. The Public Water Supplies Datalayer (2000) indicates that no public drinking water supplies are located within 500 feet of the project.

#### **4.6.3. Geology and Soils**

The *Surficial Geologic Map of the Framingham Quadrangle, Massachusetts* indicates that surficial material within the project area is comprised of glacial lake deposits of Lake Charles consisting of mixtures of gravel, sand, and silt in ice-channel fillings, kame terraces, kames, kame deltas, and some outwash. In addition, a small area in the northern portion of the project area is underlain by glacial till consisting of a mixture of pebbles, cobbles, and boulders embedded in a gray to greenish-gray matrix of sand, silt, and clay sized material.

The *Bedrock Geologic Map of the Framingham Quadrangle, Massachusetts* identifies the bedrock in the southern portion of the project area as mixed rocks of the Lower Paleozoic to Precambrian. The bedrock in the northern portion of the project area consists of Westboro quartzite and Milford granite.

The *USDA NRCS Middlesex County, Massachusetts Interim Soil Survey Report* indicates that the soils in the southern portion of the project area consist mainly of Udorthents, sandy, and the soils in the northern portion of the project area consist mainly of Merrimac-Urban land complex. Udorthents consist of areas from which soil has been excavated and/or deposited due to construction operations. These areas have been disturbed to the extent that the natural layers of soil are no longer recognizable. Merrimac-Urban land complex consists of nearly level to undulating, deep, somewhat excessively drained Merrimac soils and areas of urban land. The map unit consists of about 75 percent Merrimac and similar soils and at least 25 percent urban land and other disturbed areas.



In addition to natural geologic deposits, the Maynard Road site has been excavated and filled. Fly ash contaminated fill from FSC Athletic Center project was disposed of beneath the existing parking lot. The Massachusetts Division of Capital Asset Management, which administered the construction of the new Athletic Center, retained a consultant to test the material and make recommendations for its treatment. It was approved for placement beneath a 4-inch asphalt cover.

#### **4.6.4. Prime Farmlands**

According to the *USDA NRCS Soil Survey Maps of Middlesex County, Massachusetts*, the project area contains two areas identified as prime farmland. The soils in these areas consist of Winooski very fine sandy loam, 0 - 3 percent slopes. These prime farmland soils are located on both sides of the Sudbury River, just north of Farm Pond. In addition, one area classified as Farmland of Statewide or Local Importance (Windsor loamy sand) is located along the project area, east of Farm Pond. However, no lands within the project area are currently used for agricultural purposes.

#### **4.6.5. Floodplains**

The Federal Emergency Management Agency (FEMA) has prime responsibility for delineating floodplains for the purposes of floodplain regulation and flood insurance. The 100-year flood is the flood elevation that has a 1% chance of being equaled or exceeded each year. The 500-year flood is the flood elevation that has a 0.2% likelihood of being equaled or exceeded each year. The floodplain mapping from the *Flood Insurance Rate Map, Town of Framingham, Middlesex County, Massachusetts* (Community Panel Number 250193 0008C and 0011B) was reviewed to identify floodprone areas in the study area.

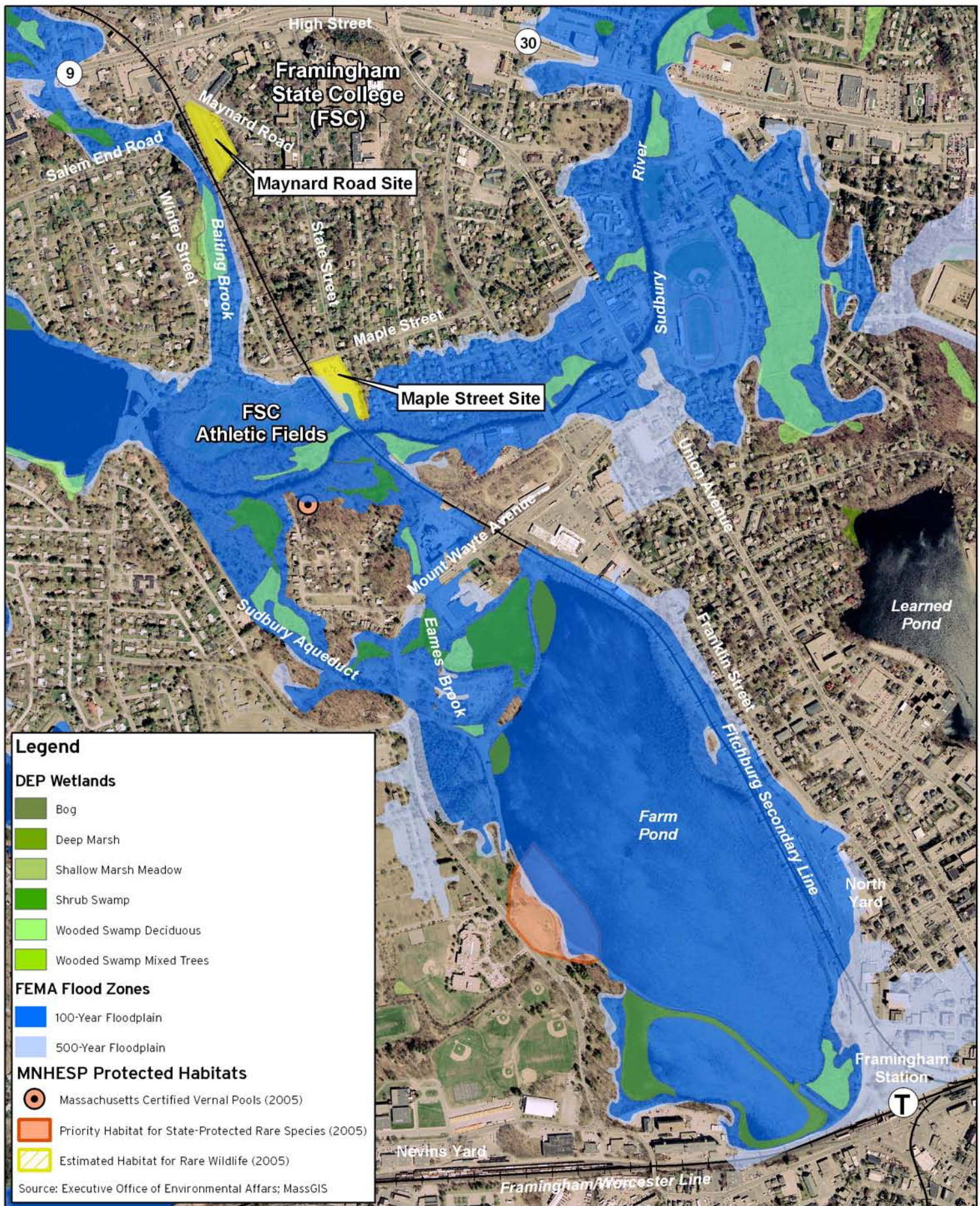
Within the study area, the Framingham wye is located within areas that would be inundated by a 500-year flood (Figure 14). The 100-year floodplain surrounding Farm Pond extends over the CSX track at the CSX North Yard and adjoins the track where it borders the pond. North of Farm Pond, the 100-year floodplain surrounding Eames Brook adjoins the CSX track. The CSX track is located within the 100-year floodplain where it closely borders Eames Brook and crosses the Sudbury River. The 100-year floodplain extends into the southern portion of the Maple Street parking lot. The Maynard Road lot is located outside of the 100-year floodplain.

#### **4.6.6. Wetland Resource Areas**

##### **4.6.6.1. Wetland Definitions, Classifications, and Study Area Occurrences**

Wetlands generally include swamps, marshes, bogs, and similar areas [33 CFR 328.3(b)] and can be isolated or bordering on a waterbody or waterway. Wetlands are subject to protection under Section 404 of the U.S. Clean Water Act and the Massachusetts





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**Natural Resources**

**FIGURE 14**





Wetlands Protection Act. The U.S. Army Corps of Engineers, which has jurisdiction under the U.S. Clean Water Act (under 33 CFR Parts 321-330, November 12, 1986), defines waters of the United States as aquatic habitats that include open water areas and wetlands.

The U.S. Fish and Wildlife Service Classification System defines five basic types of wetland systems: marine, estuarine, riverine, lacustrine, and palustrine. Two of these wetland classification types, lacustrine and palustrine, adjoin the CSX track in the study area, and these are defined below

- **Lacustrine** system includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres).
- **Palustrine** system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ‰.

These wetland classifications, shown on the National Wetlands Inventory, and resource areas correspond closely to the MassGIS wetlands mapping (shown on Figure 14) and are described below.

- **Farm Pond:** In the study area, the National Wetlands Inventory mapping shows that Farm Pond, west of the CSX track, is described as a lacustrine, limnetic, open water wetland (L1OW).
- **Sudbury River and Eames Brook:** In addition, an area identified as a palustrine, forested, broad-leaved, deciduous wetland (PFO1) is shown on the south side of the Sudbury River along Eames Brook, just west of the project area. A palustrine, forested wetland is also shown on the north side of the Sudbury River, just east of the project area.
- **Baiting Brook:** a third palustrine, forested wetland is shown just west of the northern portion of the project area in the vicinity of Baiting Brook and Winter Street.

As discussed under “Geology and Soils,” soils in the of the project area consist mainly of Udorthents and Merrimac-Urban land complex. These soils are not considered hydric or wetland soils, nor do they contain hydric inclusions.

Within and adjacent to the project area, there are six types of resource areas subject to protection under the Massachusetts Wetlands Protection Act and implementing



regulations (310 CMR 10.00) in waterways or wetland areas (see Figure 14). These applicable wetland resource areas are defined below:

- **Bank** normally abuts and confines a water body. Bank occurs between a water body and a vegetated wetland or adjacent floodplain or between a water body and upland.
- **Bordering Vegetated Wetland** include those vegetated freshwater wetlands that border on water bodies and waterways.
- **Buffer Zone** is defined as the area of land extending 100 feet from bank, waterways, or wetland resource areas.
- **Land under Water Bodies/Waterways:** The land area under any creek, river, stream, pond or lake is a resource area subject to protection.
- **Bordering Land Subject to Flooding:** The boundary of Bordering Land Subject to Flooding (BLSF) is defined as the maximum lateral extent of floodwater, which will theoretically result from the statistical 100-year frequency storm, as defined by the FEMA Flood Insurance Rate Maps.
- **Riverfront Area:** Land between a perennial river's mean annual high-water line and a parallel line located 200 feet away, measured horizontally outward from the river's mean annual high-water line.

Although wetland resource areas extend along the CSX track project area, the area of the CSX track itself is situated above the grade of adjoining wetland areas, and wetlands do not extend across the track areas. The CSX track extends over the Sudbury River on an elevated bridge structure.

#### 4.6.6.2. Resources at the Maynard Road Site

A forested wetland that borders Baiting Brook is located southwest of the Maynard Road lot. No wetland resource areas were observed on this lot; however, portions of the lot may be located within the 100-foot buffer zone of the forested wetland that borders Baiting Brook. This boundary of this wetland was not determined because it is located on private property.

#### 4.6.6.3. Resources at the Maple Street Site

The southern portion of the Maple Street lot lies within the 100-year floodplain of the Sudbury River. As described above, land in the 100-year floodplain is considered bordering land subject to flooding and is a resource area subject to the regulations of the Massachusetts Wetlands Protection Act.



The southern portion of the Maple Street lot is also located within the 200-foot Riverfront Area of the Sudbury River and the 100-foot buffer zone of the bordering vegetated wetlands along the north side of the river.

In addition, a drainage channel that occupies the area between the track and the Maple Street lot appears to convey discharges into the Sudbury River via a culvert bordering the southwest corner of the parking lot. This channel appears to be an intermittent drainage and was observed to hold isolated pockets of standing water during a site walkover of the CSX track on August 13, 2005. This area may potentially be considered subject to jurisdiction as a resource area.

#### **4.6.7. Protected Habitats/Endangered and Threatened Species**

The presence of endangered or threatened plant or animal species was identified by sending inquiries to the U.S. Fish and Wildlife Service and the Massachusetts Natural Heritage and Endangered Species Program (MNHESP) and through review of the MassGIS data. The MassGIS data reviewed included the 2005 MNHESP Estimated Habitats of Rare Wildlife, the 2005 Priority Habitats for State-Protected Rare Species, and 2003 Certified Vernal Pools.

In correspondence dated June 18, 2004, the U.S. Fish and Wildlife Service indicated that no federally listed or proposed threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area. Review of the MassGIS MNHESP data layers indicate that there are no state-protected species or certified vernal pools in the project area.

The only state-protected habitat in the project vicinity is a Priority Habitat Area for Rare Species on the west side of Farm Pond, which is outside of the project area. The Massachusetts Natural Heritage and Endangered Species Program reported that Priority Habitat 786 on the west side of Farm Pond hosts a rare plant, Engelman's Umbrella-Sedge (*Cyperus engelmannii*).

According to the Areas of Critical Environmental Concern Program Guide, there are no identified Areas of Critical Environmental Concern within 500 feet of the study area.

#### **4.7. Cultural Resources**

Protection of cultural resources is mandated under Section 4(f) of the U.S. Department of Transportation Act, Section 106 of the National Historic Preservation Act, and Massachusetts laws (MGL Ch. 9, s. 26-27C) and regulations (950 CMR 71.00). Historically significant places and archeological resources are listed on the National Register of Historic Places and the State Register of Historic Places.





#### 4.7.1. Cultural Resources along the Fitchburg Secondary Line

Review of the MassGIS database for the State Register of Historic Places indicates that the project area extends within approximately 500 to 600 feet of six listed historic districts or sites. In downtown Framingham, there are also three National Register Districts proximal to the project area. This listed sites or areas are described below:

- The **Framingham Railroad Station**, at the Framingham commuter rail stop, west of the wye with the Fitchburg Secondary Line, is listed on the National Register of Historic Places.
- The **Concord Square National Register Historic District** extends to the northeast of, and borders on, the Fitchburg Secondary Line at the wye with the Framingham/Worcester Line.
- The **Irving Square National Register Historic District** extends along Route 126 (Hollis Street), south of the Framingham/Worcester Line and Route 135, extending within approximately 300 feet of the Fitchburg Secondary Line where it branches off from the Framingham/Worcester Line.
- The historic **Sudbury Aqueduct** also crosses under the western wye connection between the Fitchburg Secondary Line and the Framingham/Worcester Line extending west to Worcester. This western wye connection crosses the **Sudbury Aqueduct Linear National Register District**. This linear district extends to the northwest of the wye, passing within roughly 600 feet of the Fitchburg Secondary Line. The Sudbury Aqueduct is a 138-year old brick-lined aqueduct which is a component of the Water Supply System of **Metropolitan Boston National Register Multiple Property Listing**. From the wye area, the aqueduct, which is held on reserve as an emergency water supply, extends north across Farm Pond on embankment.
- The **Nutting, Walter Factory** is shown on the MassGIS mapping as an individual State Register property located within 200 feet north of the Fitchburg Secondary wye track connecting to the Framingham/Worcester Line. Located south of Park Street (46 Park Street), the property is listed as having received a determination of eligibility for listing as a National Register and is located within a National Register District. This site is also within the Concord Square Historic District.
- The **St. John's Episcopal Church** on the north end of the project area adjoins the east side of the Maynard Road lot and is listed on the National Register as an individual property.



Since the extension of commuter rail service along the Fitchburg Secondary Line would be located entirely within the existing CSX right-of-way on an active freight line, a more comprehensive cultural resource investigation focused on the Maynard Road and Maple Street sites.

#### **4.7.2. Methodology**

In order to perform this review, relevant files from the Massachusetts Historical Commission (MHC), available via the MASS GIS website and Massachusetts Cultural Resource Information System (MACRIS), and the National Park Service's on-line National Register database (NRIS) were consulted. Archaeological discussions are based on Archaeological Reconnaissance Survey for the Worcester Commuter Rail Extension (Timelines, 1993).

#### **4.7.3. Areas of Potential Effect (APE)**

An Area of Potential Effect defines the areas of focus for cultural resource investigations. Given the nature of the proposed project, an appropriate APE for each prospective station/parking garage site was defined by the immediate streetscape of the sites, bounded by the facades of the adjacent buildings where they existed. Where no structures exist, an APE of 300 feet on either side of the parking area and railway was selected because the visual impact of such a small structure would be negligible from any greater distance in this urban/suburban environment.

#### **4.7.4. Overview**

Surviving houses, public buildings, and commercial structures within the two APEs date from the 19th through the 20th centuries. The area comprises a compact grouping that includes a few historically and architecturally significant buildings.

The areas have been architecturally surveyed and appear to have undergone at least a Phase 1A Archaeological Survey. A Phase 1A Archaeological Survey is an information-gathering phase, which consists of literature searches and an assessment of the archaeological sensitivity of the study area. The Maynard Road site is known to contain contaminated fly ash fill.

#### **4.7.5. Maynard Road Parking Lot**

##### **4.7.5.1. Historic Resources**

The area around the Maynard Road parking lot is one of diverse uses. Late 20th century residential properties directly adjoin with its southern border—four homes on Mayflower Circle. Other residential properties are generally well separated from the immediate site. Along the site's westerly border, on the far side of the rail right of way, is a fairly large area



of undeveloped wetlands, providing a separation and buffer for the residences on the east side of Winter Street. To the east, on the other side of Maynard Road, all of the property belongs to FSC, except for an apartment building on Salem End Road. The buildings date from the 1880s to 1973. To the north the area between Salem End Road and Route 9 is a mix of retail, office and light manufacturing commercial activities.

MACRIS lists 15 surveyed buildings within the APE of the Maynard Road lot. The National Register and MACRIS indicate one National Register-listed structure, St. John's Episcopal Church (1870), located approximately 100 feet east of the eastern edge of the existing parking lot.

#### **4.7.5.2. Archaeology**

Although coordination with the Massachusetts Historical Commission (MHC) is ongoing, it is unlikely that MHC would have permitted the Division of Capital Asset Management (DCAM), to use the site for disposal of fly ash-contaminated fill from FSC Athletic Center (beneath the pavement) if the site was deemed to have any archaeological potential. It is unlikely that that site has any great degree of sensitivity.

#### **4.7.6. Maple Street Parking Lot**

##### **4.7.6.1. Historic Resources**

This lot is located at the southerly end of State Street at the intersection with Maple Street. It is approximately ½ mile from the main academic campus. State Street, between the main campus and Maple Street, runs through a residential neighborhood that dates primarily to first third of the 20th century. To the east of the lot is Circle Drive, lined with mid-20th century houses. Property to the west, on the other side of the railroad right of way includes FSC athletic fields and undeveloped land adjacent to the Sudbury River to the south.

MACRIS lists 5 structures within the APE, including the John Towne house (1700) at 225 Maple Street and the immediately adjacent 172 Maple Street that dates to 1835. None of the five structures are listed on the National or State Registers.

##### **4.7.6.2. Archaeology**

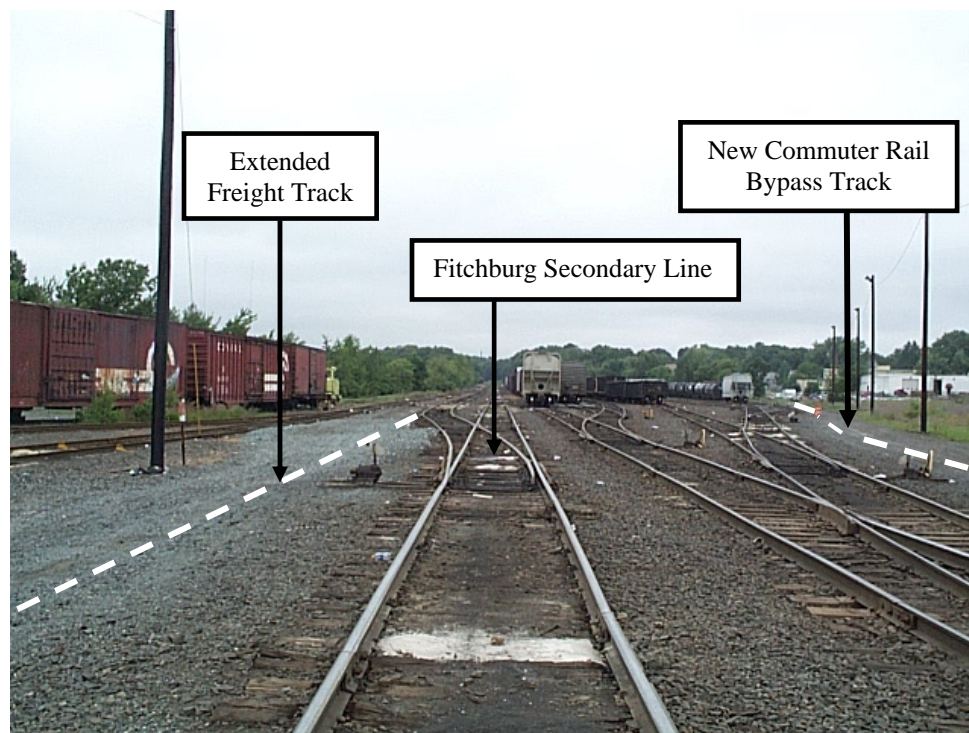
This well-drained site slopes gradually towards the Sudbury River at a 3% grade south from Maple Street. Although coordination with the Massachusetts Historical Commission (MHC) is ongoing, Timelines 1993 has indicated that such sites along the river may have medium to high sensitivity for prehistoric remains, despite the prior soil disturbances that may have occurred while the parking lot was constructed.



## 5. Transit/Station Platform Concepts

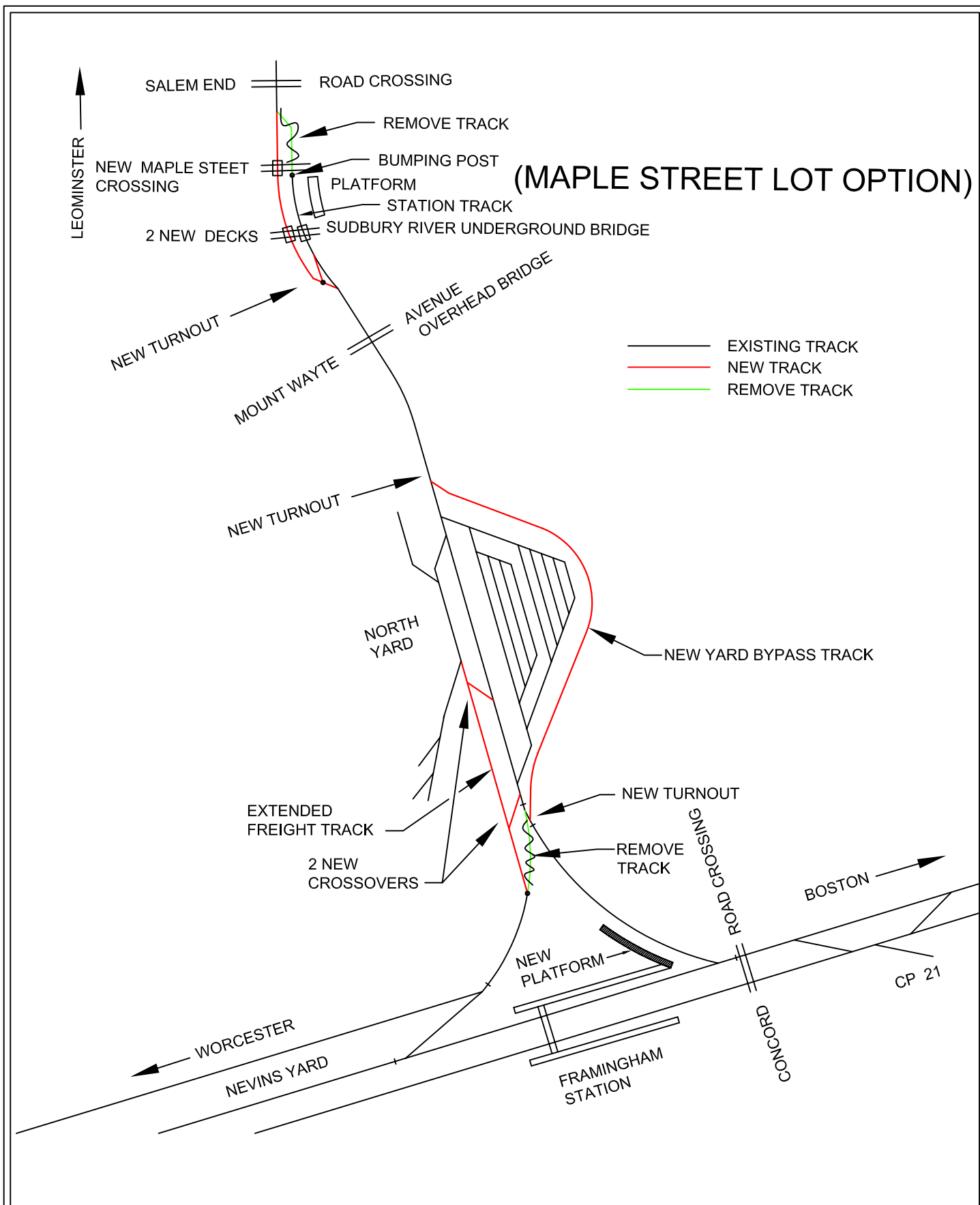
### 5.1. Track Improvements

The major physical impediment to reactivation of the rail service is the fact that this section of track is classified as yard track, as part of North Yard. This classification confers a maximum operating speed of 10 miles per hour (mph). There are no instances where the MBTA operates commuter rail service through an active freight rail yard; therefore it is assumed that a bypass track, 2,800 feet in length, would be constructed on the east side of the North Yard. There appears to be ample right-of-way, and this may require some reconfiguration of the yard tracks. The yard limits for the track accommodating passenger trains would need to be reclassified and shifted from the current location at Route 9 south to where the bypass track extends around the North Yard and ties back in to the wye. In addition to the bypass track, a 600-foot siding track on the west side of the yard would be extended south to the western wye track with the Framingham/Worcester Line to allow freight trains to access the yard on a segregated track (Figures 15, 16, and 17). It is assumed that, with the proposed track improvements to upgrade the track and segregate passenger trains, operating speeds could be increased on the track carrying MBTA passenger trains. Operating speeds would be determined based on negotiations



**Figure 15**—Photograph, looking north, at proposed freight track and commuter rail bypass track in North Yard



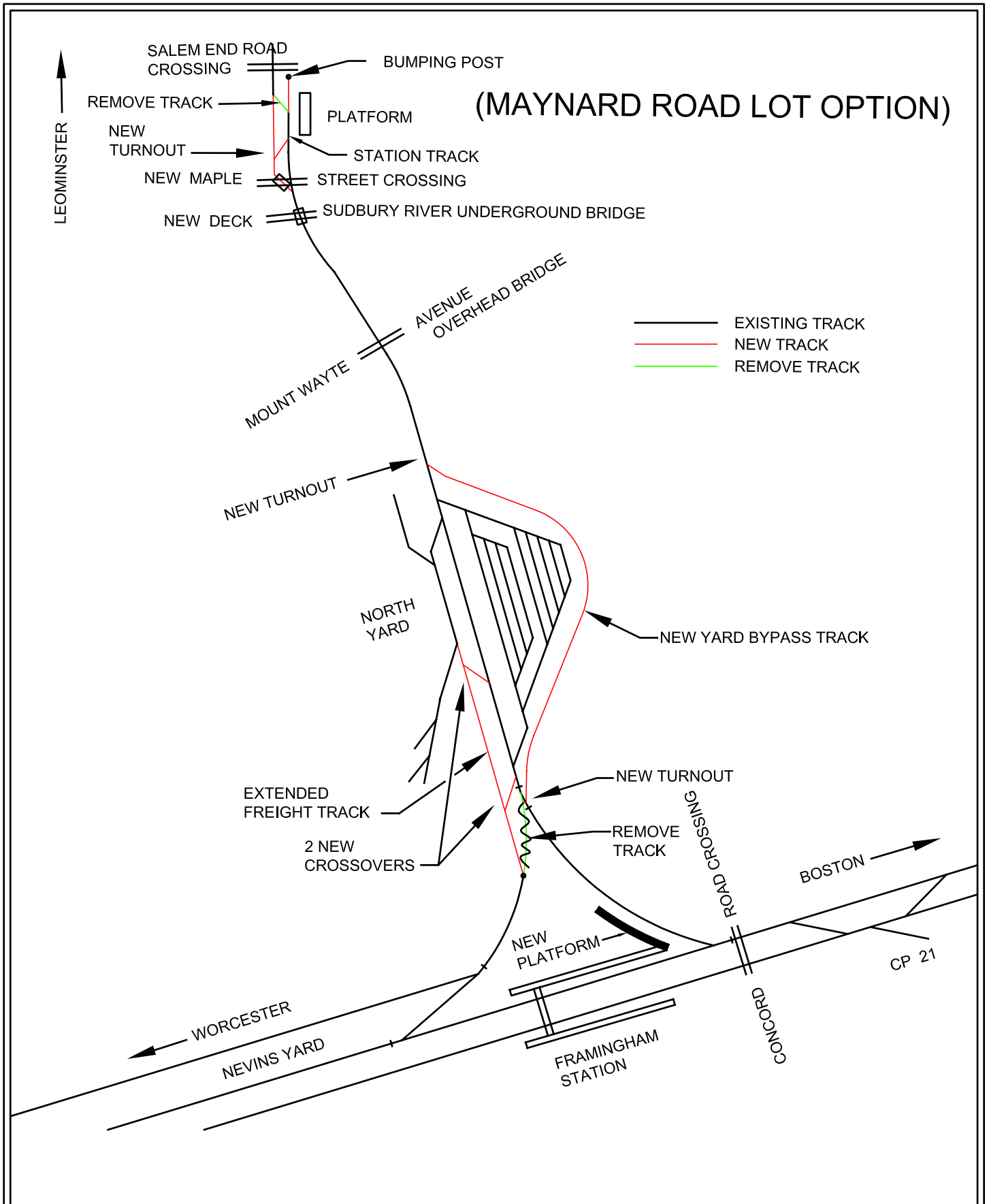


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**Framingham State College**  
**Commuter Rail Station**  
 Feasibility Study

**Schematic**  
**Track**  
**Improvements**  
**Maple Street**  
**FIGURE 16**



**HNTB**



**Framingham State College**  
**Commuter Rail Station**  
 Feasibility Study

**Schematic**  
**Track**  
**Improvements**  
**Maynard Road**  
**FIGURE 17**



with CSX, but these track improvements could accommodate an increase of maximum operating speeds in this area of 30 to 45 mph.

The commuter rail extension will consist of improvements to the existing Fitchburg Secondary Line track structure, the signal system (or new signal system), and track-related infrastructure improvements, such as a grade crossing for passenger trains (for the Maynard Road site only) and culverts. This work will be performed within the existing CSX right-of-way, with the exception of where the station proper ties into the parking garage on FSC property.

Both the track upgrade and signalization will be based on negotiations with CSX; however, the following assumptions have been made for the purpose of site selection of a new station:

- The track will be upgraded to MBTA standards for a new extension and will meet those requirements of Federal Railroad Administration Class 4 or better. The existing track is rated as FRA Class 2, which would allow a maximum speed of 30 mph. However, CSX operates this section of track as yard track with maximum speeds of 10 mph. These track improvements will primarily consist of spot-tie replacement, new welded rail, and surfacing and aligning of the track.
- Two new turnouts will be added to the bypass track around the east end of North Yard, and two new crossovers will be added along the siding track to be extended to the western wye.
- A new turnout will be added for the lead to the station track at each site and the end of each track will include a railroad bumping post, and the existing freight track would be relocated to the west.
- A CSX crossing without a warning system will be added in the yard area and, for the Maynard Road station site alternative, a grade crossing with warning system will be required at Maple Street.

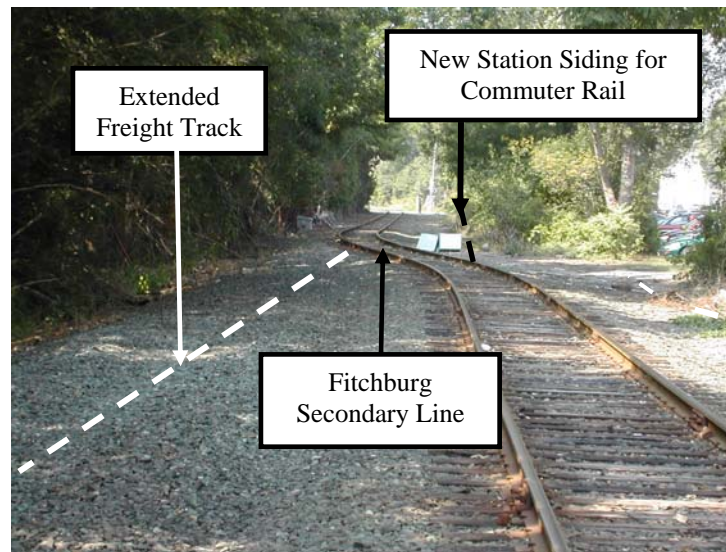
Additional track would be added in the vicinity of the proposed stations to allow freight service to continue on a relocated track, and the station platforms would be constructed off a spur or single-ended siding track located largely along the existing freight track.

For the Maple Street station site, this would require constructing 980 feet of new passing track for freight trains (Figure 16). The turnout to the proposed station would occur south of the Sudbury River crossing, with a switch to direct passenger trains to the existing track. The new track for freight trains would be carried over the Sudbury River on the existing bridge, at the location of the former track that previously existed on the bridge. The existing track would be stub ended at Maple Street, with a bumping post to



prevent passenger trains from crossing the grade crossing. The freight track would extend from south of the Sudbury River bridge crossing to north of Maple Street and would include the new passing track plus 3,500 feet of relocated track.

For the Maynard Road station, the new track would be constructed over a distance of 900 feet to provide a passing track for freight trains alongside the station siding, and 2,200 feet of the track would be shifted to the west of the station track, to accommodate these freight movements (Figure 17). The new track would start south of Maple Street, taking advantage of existing curves. A switch would be added that could direct passenger trains onto a siding track, located partially along the existing track. The station siding track would be stub ended at Salem End Road, where a bumping post would be added at the end of the track to prevent trains from crossing Salem End Road. The freight track would be relocated to the west of the existing track, north of Maple Street, before rejoining the existing track at the line over south of Maynard Road. At the south end of the Maynard Road parking lot, the CSX track lines over from the east side of the right-of-way to the west side of the right-of-way (Figure 18). This would be area in which the new track would be added for the station siding, parallel to the existing freight track.



**Figure 18**—Photograph, looking north, of the line over southwest of the Maynard Road lot and proposed freight passing track and station siding





Another advantage to the use of a station side track at both the Maynard Road and Maple Street locations is that it will be easier to protect the Salem End Road and Maple Street grade crossings, respectively, through the use of bumping posts at the stub ends, without unnecessary lowering of the crossing gates.

The construction of the trackwork will have to be coordinated to limit impacts on CSX freight service which will be primarily in the yard area.

Another option for improvements at the wye with the Framingham/Worcester Line, which is outside the scope of this investigation, would be to construct a platform on the west side of the eastern wye with the Framingham/Worcester Line to provide for boarding and transfers at Framingham Station. This would provide access to Framingham Station, since the existing station platform is west of the wye.

## **5.2. Signal System**

### **5.2.1. Introduction**

To reach Framingham State College, MBTA passenger trains will diverge from the Framingham/Worcester Line at existing Control Point (CP) 21 via the CSX North Yard/Fitchburg Secondary Track and will continue to the proposed station siding track. Presently, the North Yard/Fitchburg Secondary Line is not signalized and is currently used on a daily basis by CSX for freight train switching operations and service to the north.

As a condition of running commuter service, a signal system will be required to be in place prior to the beginning of revenue service. The signal system would be used to regulate movements on intersecting tracks at designated “Control Points (CPs)” to prevent collisions between freight and passenger trains and control movements within each segment between control points, referred to as an interlocking. The area between signal controls is referred to as a block.

The use of Yard Track 2, which is the running track through the yard, for passenger service does not appear to be feasible from both an operational and financial perspective and would also require a significant reconfiguration of the North Yard tracks. Two new multi-switch, multi-sigaled interlockings would be required to achieve that operational scenario at great expense.

The preferred route through this North Yard area would be to install a new bypass track east of Track 12 that will lead from the north leg of the wye and skirt around the yard, tying back into the Fitchburg Secondary Line north of the existing yard. This will require reconfiguration of the yard lead switches at the north end of the wye, as follows:



- The west leg of the wye would be repositioned onto an extended Yard Track 1; removing it from Yard Track 2, and
- A new hand throw crossover would be installed between Yard Tracks 1 and 2.

This will provide CSX freight trains unimpeded access between Nevins Yard and North Yard. CSX would still be able to gain access to CP 21, and this configuration would provide better segregation of the proposed commuter rail and CSX operations. Along with track improvements, three (3) new single switch Control Point (CP) interlockings, with a “cab, no-wayside” type of Automatic Block System (ABS) between interlockings are proposed. This type of system is currently in use along the Framingham/Worcester Line and involves locomotive-based (cab) signal controls, instead of installing signals alongside the track, and a continuous track to train transmission system. In addition, Maple Street and Salem End Road highway-rail grade crossings will receive new automatic highway crossing warning (AHCW) equipment and controls.

#### **5.2.2. Control Points**

CP21 is a dispatcher-controlled interlocking located at the Route 126 (Concord Street) grade crossing in Framingham. It is currently configured as a universal interlocking, with two additional turnouts. One turnout leads from Main Line Track 2 south to the southern portion of the Framingham Secondary Track that continues to Walpole. The other turnout leads from Main Line Track 1 north to the east leg of the wye connecting to the Fitchburg Secondary Track and the North Yard. This configuration can be adapted to establish commuter rail service to Framingham State College.

The northern limit of CP21 is located on the east leg of the wye at the home signal. This signal will remain as the entrance back on to the main tracks. It is expected that no changes will be necessary with regard to ground equipment, with the required changes being made to the signal circuitry to tie into a new interlocking proposed at the north end of the wye.

The three new Control Point (CP) interlockings will be dispatcher-controlled and will employ the same type of equipment currently in use on the existing signal system on the Framingham/Worcester Line. This system consists of a system with signals installed on the locomotives or cabs, rather than on signals alongside the track: a “Cab, No-Wayside” type ABS System and vital microprocessors within each interlocking. The “Cab, No-Wayside” system is accomplished through a continuous track to train transmission system with the use of Electrocode 4 (EC4) units coupled with Electro Cab units (cab signal generators) between interlockings. EC4 is an electronic track circuit that uses the rails to convey track, block and aspect information, both to opposing signal apparatus (interlocking or adjacent block) and cab-equipped trains. Interlockings are equipped



with Harmon's Vital Harmon Logic Controller (VHLC), and are interfaced with the outlying track circuits by use of Electro Code Track Circuit Interface units.

#### **5.2.3. Control Point at the North End of the Wye (CP NWYE)**

The first proposed control point (CP) will be located at the north end of the wye and will consist of one Number 10 (angle of 1:10) left-hand turnout from the east leg of the wye to Yard Track 2. The west leg of the wye will be relocated to tie into the proposed Yard Track 1.

#### **5.2.4. Control Point North of North Yard (CP NYN)**

The second proposed control point (CP) will be located north of the existing north end of North Yard. This interlocking will be a mirror image to the CP NWYE, providing powered moves from the Yard Tracks back onto the Fitchburg Secondary Line.

#### **5.2.5. Control Point at FSC Station (CP FSC)**

The third proposed control point (CP) will be located south of the proposed station regardless of which site is chosen. It will be a single-switch interlocking that will incorporate the highway-rail grade crossing at either Maple Street or Salem End Road.

It is anticipated that all three CPs will require new AC power services, including snowmelters. All new turnouts will be equipped with dispatcher-controlled electric operated switch machines.

#### **5.2.6. Grade Crossings**

The automatic highway crossing warning equipment at the Salem End Road and Maple Street grade crossings are assumed to be near or at the end of their expected life cycle and are to be replaced with new ground equipment and constant warning device control circuitry.

### **5.3. Structural Improvements**

There are two major structures along the existing Fitchburg Secondary Line: the Mount Wayte overpass and the Sudbury River Bridge. In addition, if the Maynard Road site is selected, a wall supporting an adjoining residential structure on Mayflower Circle is located south of the existing lot and adjoins the track.

#### **5.3.1. Mount Wayte Avenue Overpass**

The bridge carrying Mount Wayte Avenue over the Fitchburg Secondary Line has adequate clearance to accommodate a second track, but a single track is proposed in this



location. This bridge is a three-span concrete bridge, with the center span extending over the existing track. No bridge modifications are required for maintaining the existing track at the present location, however, substructure repairs are recommended. Based on the review in the field, the bridge superstructure appears to be in satisfactory condition with some isolated concrete spalling. The bridge piers are severely deteriorated with concrete spalls, exposed rebar, and surface cracking.

The bridge piers should be rehabilitated to extend the life of the bridge. A structural inspection is recommended should the project proceed to final design. At a minimum, all deteriorated concrete should be identified and repaired. The exposed reinforcing steel should be pressure cleaned and coated with protective agent, and the concrete spalls and cracks should be repaired.

### **5.3.2. Sudbury River Bridge**

The Sudbury River Bridge is a simple-span open bridge with four riveted steel girders that spans over Sudbury River. Presently, this bridge carries a single track and appears to have been designed to carry two tracks. The original construction of the Fitchburg Secondary Line included a second track, which has since been removed. There is a single girder under the existing and former track locations, and for improvements at the Maple Street site, the new track would need to be located on the existing girder. Based on field observations, the built-up girders appear to be in fairly good condition. At the center of the two sets of girders, there is a steel grate loosely attached to the railroad ties with steel spikes for pedestrian traffic. There is also a loosely attached metal handrail.

Should the project advance to the final design phase, a structural inspection of the bridge superstructure and substructure is recommended. Based on the inspection report, a structural adequacy check on the existing built-up steel girders subjected to train (Cooper E 80) loading should be performed. The bridge superstructure will require some minor rust removal and painting. The pedestrian grate and handrail will have to be removed and replaced.

### **5.3.3. Maynard Road Retaining Wall**

The south end of the Maynard Road lot includes a stacked stone block retaining wall at the base of an embankment for a property on Mayflower Circle on the south end of the lot. Although there is no direct overlap between the proposed platform construction and this retaining wall, it appears that this wall is vulnerable to any nearby construction activities. The platform will most likely will be founded on drilled-in-place circular concrete foundations to avoid conflict with the retaining wall.

It is recommended that excessive vibration be avoided during construction of the platform, but to ensure that impacts will not occur, the platform will stop short of the





retaining wall. Complete replacement of the retaining wall is not assumed as part of the proposed improvements, but, if it were required, it is estimated that this would cost approximately \$400,000.

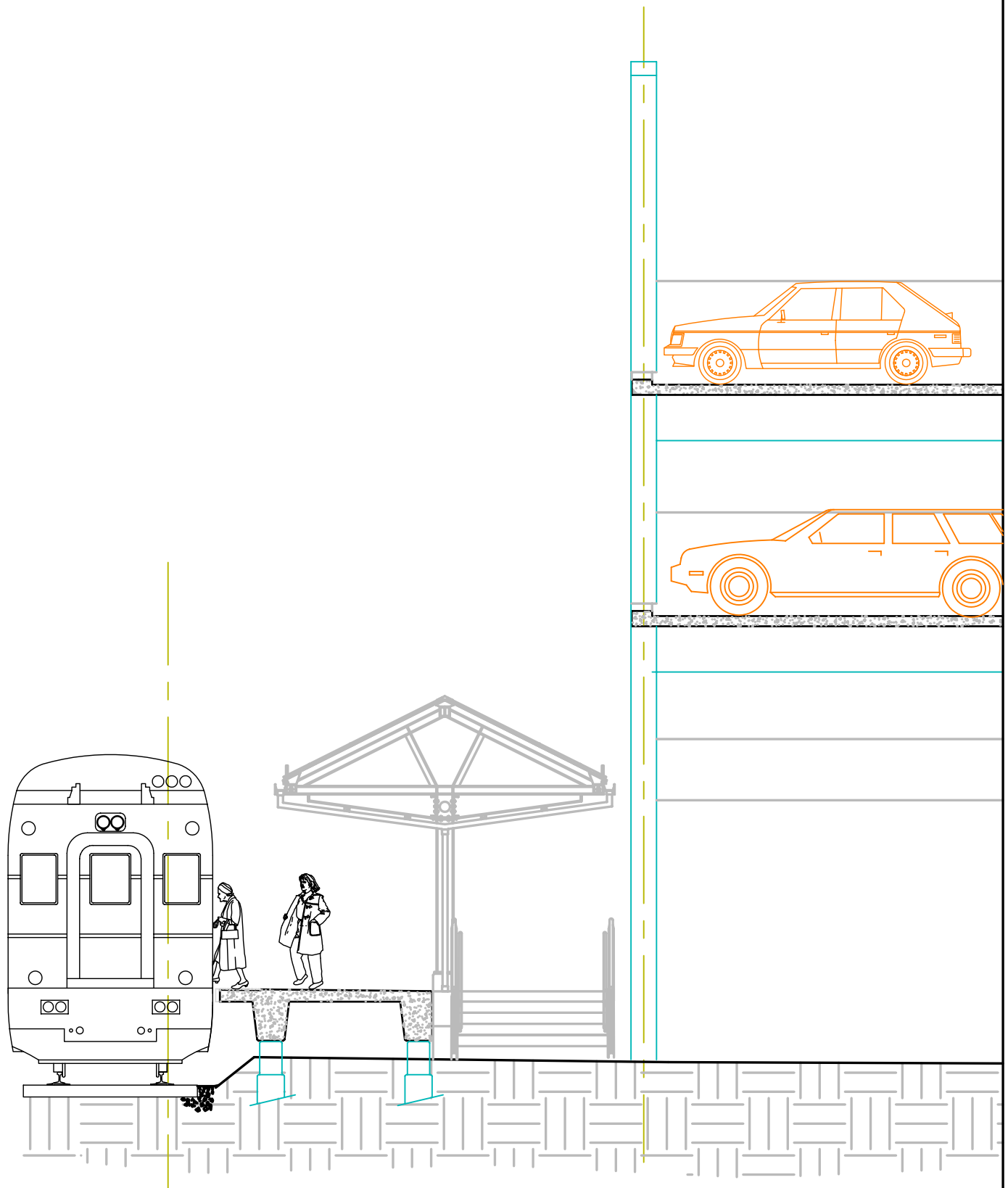
#### **5.4. Platform/Station Site Improvements**

The transit station layout would be similar to other MBTA commuter rail stations: a full high-level platform would be used to allow boarding onto the train from any location along the platform. High level means that the platform elevation will match the train threshold to allow level boarding which meets the Americans with Disabilities Act (ADA) requirements.

The Maple Street site has the added constraint of the Sudbury River Bridge that is located immediately south of the proposed station site. The use of a standard full length platform of approximately 800 feet would require spanning across the Sudbury River, thus triggering more environmental issues and costs. At the Maynard Road site, a full-length platform would require extensive modifications or replacement to the retaining wall along the railroad right-of-way at the south end of the existing parking lot. For the purposes of this study, it has been decided to limit the station platform lengths at both sites to approximately 600 feet, which would allow the platform at the Maple Street site to stop just short of the river and would allow the platform at Maynard Road to end before the retaining wall.

The station platform and station amenities will be nearly identical at each study location, with the exception of the proposed use of a curved platform at Maple Street to meet the existing track curvature. The platform at each site will be a 600-foot long high-level platform (see Figure 19). The use of a curved platform at Maple Street would require greater clearance from the platform, which would be problematic for meeting ADA gap requirements. The remaining station amenities would be similar to those used at other MBTA stations and would be in compliance with the MBTA Guidelines for Stations. The station amenities will consist of:

- a 96-foot canopy at a location adjacent to the pick-up/drop-off areas,
- lighting,
- signage,
- windscreens,
- schedule cases,
- benches,
- bicycle racks, and
- trash containers and limited landscaping.



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**Cross Section**  
**Typical Platform**  
**FIGURE 19**



The communications system will include a public address and LED signage.

The track configuration at both the Maynard Road and Maple Street sites would include a station side track to allow the commuter rail trains to exit the Fitchburg Secondary Line onto a dedicated station track. This would incur some extra costs associated with the extra track length and the need for a turnout and related signal work. However, it would solve two problems. The first is it would get the commuter rail traffic off of the Fitchburg Secondary Line, thus allowing freight trains to pass at the station. The station siding could also be a location where MBTA train sets could layover. The second problem this arrangement solves is the clearance of freight trains at the high platform. Since some freight trains would not clear the high platform, provisions would otherwise have to be made to allow the wide trains to pass. This can be done with an articulated/breakaway platform edge, which can be lifted out of the way to allow trains to pass, or, in the event of an errant wide train, the platform edge breaks away without causing more catastrophic damage to the platform. The use of a side track for the station would obviate the need for the articulated/breakaway platform.

## 5.5. Cost Estimates

The costs associated with providing rail service (for the track improvements, signalization, and station/platform) for the two alternative sites, as described in the preceding sections, and costs of the proposed parking garage were estimated separately. The costs for transit/rail upgrades are included in the following cost table (Table 2), and do not include rolling stock (or train locomotives). The transit station costs were developed based on recent bids for similar work. The track and signalization costs were developed from recent bids for similar work on CSX track and signal structure. It will be CSX's decision if the construction will be performed by a contractor or through a CSX Force account with CSX maintenance employees actually performing the work.

The total transit-related costs for the commuter rail extension and station site development are estimated to range between \$7.83 million (Maynard Road site) and \$7.931 million (Maple Street site). These estimates do not include rolling stock, parking, or costs associated with a layover facility.

The rolling stock costs were estimated in the *CTPS I-290/Northborough Commuter Rail Extension Feasibility Study* (page 48). This study looked at several scenarios for service levels and number and types of trainsets, and rolling stock costs were estimated to range from approximately \$51 million (start-up service with three trainsets) to \$85 million (maximum service with five trainsets with double-deck coaches) for traditional diesel locomotives. It should be noted that the rolling stock estimates were for improvements



along the entire 15.7-mile line, compared to the proposed reactivation of rail along 1 to 1.5 miles to the FSC campus.

Table 2 shows the cost portion for the track and signalization portion of the site alternatives. The slightly higher costs will be incurred at the Maple Street site, due to the additional length of track for improvements at this site. Equipment at the grade crossings at both sites would be replaced, with the installation of a new automatic highway warning system (AHWS) at the Salem End Road and Maple Street crossings.

**Table 2—Construction Cost Estimate: Transit and Station**

Item	Maynard Road Site	Maple Street Site
Track	\$1,400,000	\$1,494,000
Signal	\$3,306,000	\$3,306,000
Bridges	\$80,000	\$80,000
Culverts/Drainage	N/A	\$10,000
Utilities	\$50,000	\$50,000
Right-of-way	N/A	N/A
Station	\$963,000	\$963,000
Sub-Total	\$5,800,000	\$5,904,000
25% contingency	\$1,450,000	\$1,476,000
8% Engineering Design	\$580,000	\$590,000
<b>Total</b>	<b>\$7,830,000</b>	<b>\$7,971,000</b>

## **6. Parking Garage Concepts**

### **6.1. General**

Both of the prospective parking garage sites appear to allow the use of separate entry/exits for commuters and students. The separate entries would make it possible to keep the internal circulation of commuters and students independent. Commuters, entering the site can be directed to either the drop-off/pick-up area or to parking adjacent to and at grade with the station platform, and would be segregated from student parkers. Both sites are capable of providing 200 to 210 spaces of MBTA commuter parking at grade level. A total of 800 spaces of parking for FSC can be provided with a combination of some parking at grade level and the balance on three levels of parking structure above. Given the proclivity of both commuters and students to time their respective arrivals on a





“just in time” basis, keeping them somewhat separated may serve to enhance safety.

Drop-off areas are located relatively close to the adjacent streets. This allows for easier off-site surveillance and some intuitive recognition of how the station is organized. People entering the site should be able to quickly find the platform canopy and thereby recognize where the drop-off is located. The organization of internal roadways and signage is intended to segregate the parkers, directing them to the long-term parking areas.

The student parking areas should be clearly signed as FSC facilities with limited access for permitted student parkers only. A control system can be installed that reads a pass or sticker that will only allow students or FSC personnel to enter. Otherwise, a simple sticker system to identify FSC permitted vehicles can be utilized in combination with regular patrols by FSC security personnel to identify interlopers.

Commuter parking will be controlled by MBTA standard fare collection procedures, whereby daily fee is paid by parkers. MBTA collection systems are typically ‘pay on foot’ systems utilizing payment boards, where money is inserted into numbered slots corresponding to numbered parking spaces. More sophisticated electronic systems can be utilized, which offer better revenue control and the convenience of accepting charge cards for payment. Daily parking fees in the commuter area should be sufficient to discourage all but occasional use by students.

The proposed garage, at either site, may be placed to leave a buffer space between the structure and adjacent residential properties. The buffer space should be landscaped with screen-type plant materials to reduce the impact upon those properties. The buffer space will also provide a location for the storage of snow removed from the top level parking deck. Snow melting systems should not be necessary at either location.

Both garages may be vertically organized very efficiently, utilizing a sloped parking deck as a ramp between levels. The preferred slope of such ramped parking decks is 5% or less. This allows a ten foot vertical floor-to-floor grade difference with a horizontal ramp length of 200 feet. Accessible parking cannot be provided on these sloped decks, as they exceed the maximum allowable cross slope of 2%. However, the 5% grade in the direction of travel complies with the requirements of an accessible sloped walkway. Accessible parking spaces simply have to be located on level deck areas of the garage.

Table 3 presents an outline of a proposed program for providing the amenities and access needed at the station/parking garage site.



**Table 3—Proposed Program for Station Circulation, Parking, and Amenities**

**Circulation and Parking**

1. Pedestrian Circulation
  - a. Provide accessible path of travel to/from station platform to/from adjacent public sidewalks.
  - b. Provide accessible path of travel to/from FSC student parking to/from adjacent public sidewalks connecting with academic campus.
2. Vehicular Circulation
  - a. Provide well defined vehicular entry/exit for both commuters and students.
  - b. Segregate student parking from commuter parking and commuter pick-up/drop-off.
  - c. Provide drop-off/pick-up area adjacent to platform.
  - d. Provide vertical clearance for high-top vans and possible shuttle buses where needed.
3. Parking
  - a. Provide 800 spaces of parking for FSC students
  - b. Provide 200 - 210 commuter parking spaces.
    - i. Assumed daily one-way ridership 360 commuters (assumed limited peak service levels, which would be roughly 50% of maximum full-service ridership forecasts, developed in the *I-290/Northborough Commuter Rail Extension Feasibility Study*, page 48 and Tables 4-1 and 4-2).
    - ii. 40% estimated to arrive by foot or dropped off.
  - c. Parking for students segregated from commuter parking.
    - i. Control system to prevent commuter use of designated student parking.
  - d. Fee collection system for commuter parking.
    - i. Parking fee system will discourage student utilization of commuter parking.
  - e. Handicap accessible parking to be provided for both commuters and students within respectively designated areas.
  - f. Secured bicycle parking.



**Table 3—Proposed Program for Station Circulation, Parking, and Amenities**

**Lighting**

1. Parking areas and vehicular circulation.
  - a. Illuminate to 1 - 2 average foot-candles.
  - b. Increase light levels at decision points (intersections, crosswalks, pick-up/drop-off area, etc.) to 5 average foot-candles.
2. Platforms.
  - a. Illuminate to 2 – 5 average foot-candles.
  - b. Select fixture and mounting height to allow 85 ft. spacing to relate to coach length and sign spacing.
3. Canopies, ramps, and stairs.
  - a. Illuminate to 5 – 10 foot-candles.

**Graphics**

1. Identification signs.
  - a. System identification signage.
    - i. Signs at station entry points.
  - b. Station identification signage.
    - i. Signs on platforms @ 85 ft. o.c. (9 signs).
      1. Tactile/Braille station identification - min. one sign.
  - c. On-site identification signage.
    - i. Handicapped parking.
    - ii. Pick-up/Drop-off areas.
    - iii. Parking space numbering.
2. Directional signs.
  - a. Trailblazers (off-site).
    - i. Locate at nearby intersections (8 signs).
  - b. On-site directional signage.
    - i. Direction to commuter parking.
    - ii. Direction to student parking.
    - iii. Direction to pick-up/drop-off area.
    - iv. Station exits.
3. Regulatory/Warning signs.
  - a. No parking.
  - b. Clearance warning at ends of high-level platform (2 signs).
4. System signs.
  - a. System (spider) maps – at signs under canopy (2 signs).
  - b. Schedule panel – min. one at canopy in area adjacent to pick-up/drop-off.
  - c. LED signage.
    - i. 2 signs within canopy covered area.
  - d. Public address system





**Table 3—Proposed Program for Station Circulation, Parking, and Amenities**

**Comfort and Convenience Facilities**

1. Platform benches.
  - a. Maximum spacing – maximum spacing 250 ft. o.c. (Old Colony Standard)
  - b. Provide two benches under canopy cover.
  - c. Depending on details of layout with signage, 3 or 4 benches required.
2. Public telephone.
  - a. Locate at canopy – adjacent to pick-up/drop-off areas.
  - b. Make provision for installation by others.
  - c. TDD required, if phone provided.
3. Trash receptacles.
  - a. Locate at least one at canopy (minimum 2).

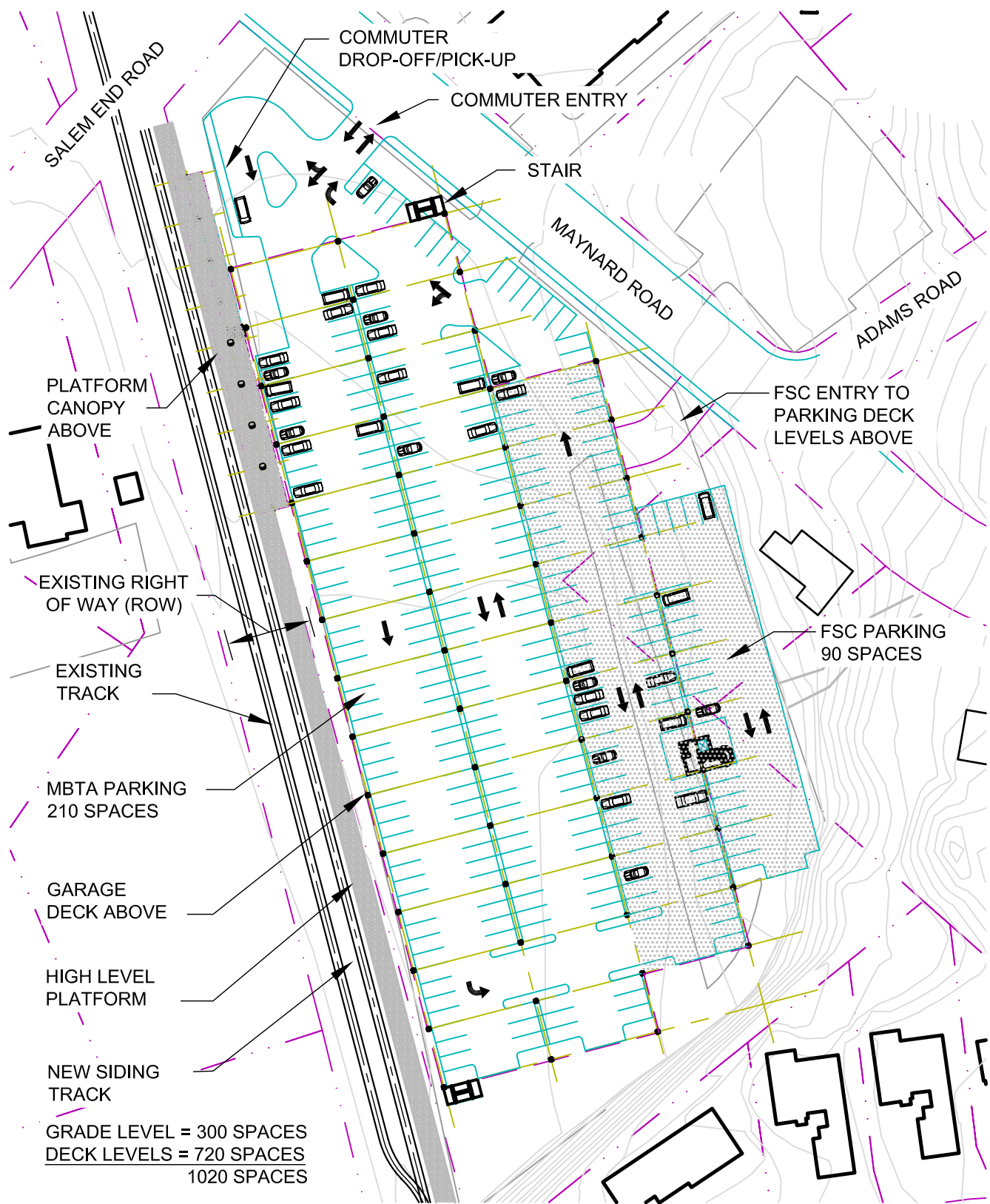
For the purposes of the study, assumptions regarding the number of parking spaces needed for the MBTA and FSC have been made, but the final number of parking spaces would be negotiated between the MBTA and FSC.

## **6.2. Descriptions: Specific Sites**

### **6.2.1. Maynard Road**

Since the existing track at this location follows a tangent (straight) geometry, the parallel spur or passing track for the high-level platform will also be straight. The garage will, in turn, be situated on the footprint of the existing lot on approximately 80,000 square feet and will be positioned adjacent to and parallel with the platform (Figures 20 and 21). Commuters will enter and exit the site off of Maynard Road at the low end near the existing parking lot entrance to the north, near the intersection with Salem End Road. As with the Maple Street site, the commuter pick-up/drop-off area may be located relatively close to the street and will be situated within the garage and along the station platform. A total of 90 spaces of parking at the grade level are designated for FSC utilization, with 210 spaces for MBTA commuters.

The student garage entrance may be located to the southeast, up the Maynard Road hill and just to the north side of the FSC Facilities Administration building. This point of entry will take advantage of the Maynard Road uphill grade to connect directly with the first level of the student parking garage. The proximity of the Facilities Administration offices offers an opportunity for a degree of informal, but regular, surveillance of the upper garage levels. Not having to provide a sloped parking deck ramp from the grade level leaves more property available for parking. A pedestrian bridge is recommended for



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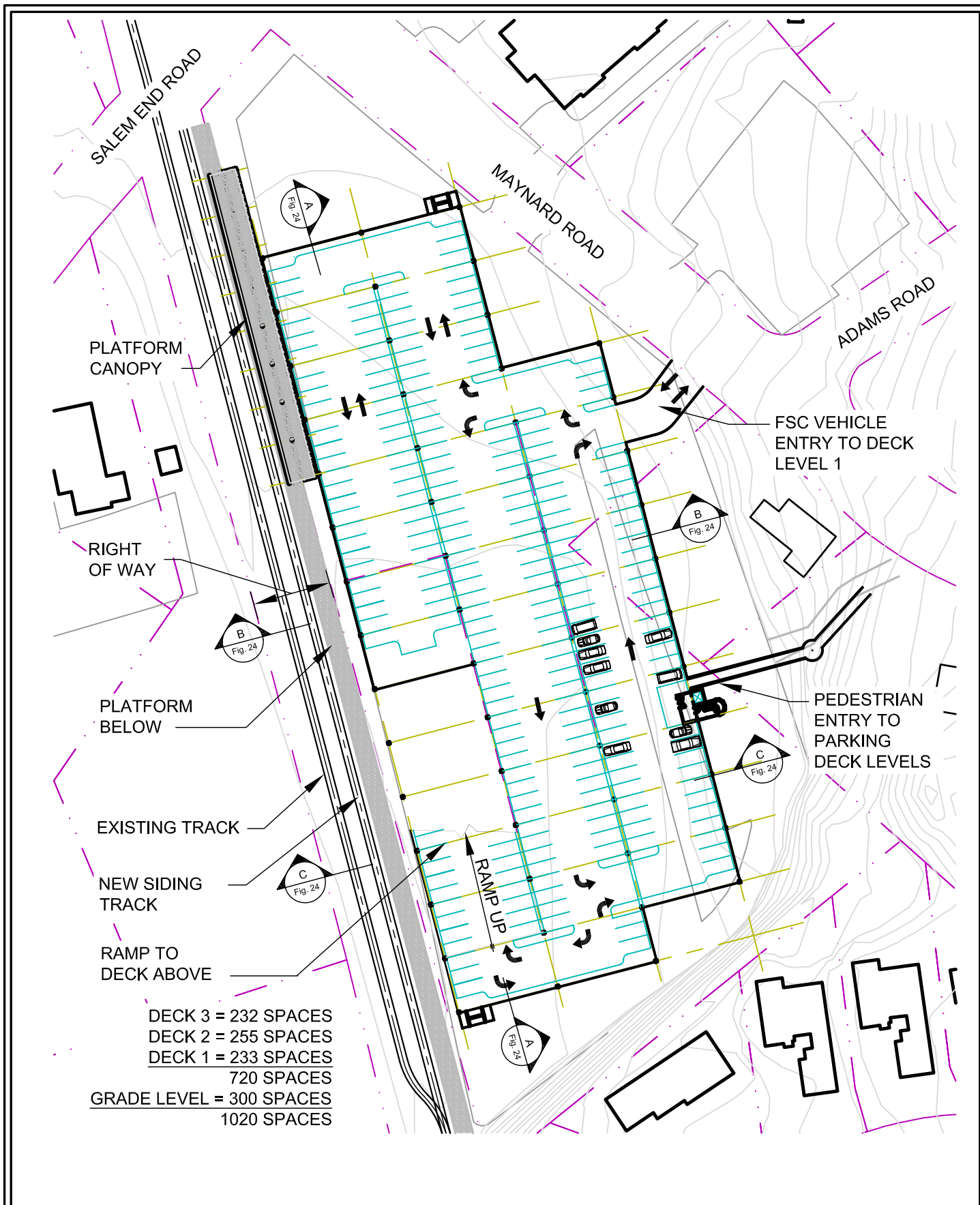


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**Proposed Station  
Maynard Road  
Grade Level  
FIGURE 20**







a location between the Facilities building and the Campus Chapel to connect the upper level decks directly to the Maynard Road sidewalk well up the hill to the main campus. An elevator will provide access to the pedestrian bridge from each of the parking deck levels.

The proposed three levels of deck will provide an estimated 720 parking spaces. With 90 spaces at grade level, a total of 810 spaces may be available for FSC utilization.

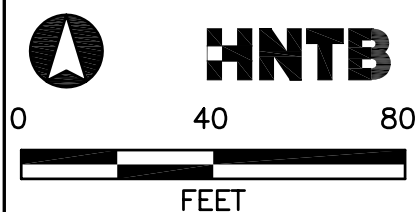
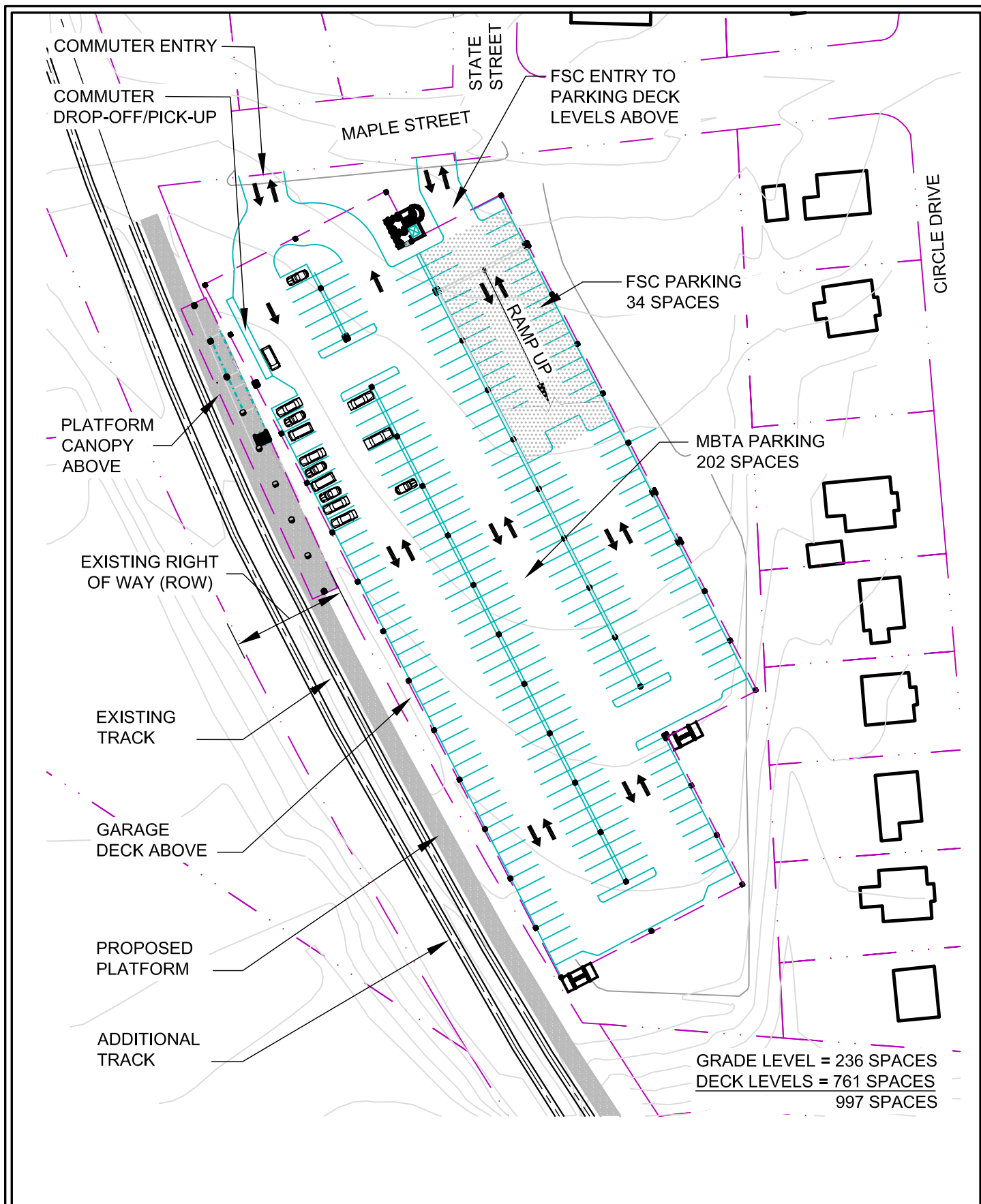
#### **6.2.2. Maple Street**

The garage will be located within the footprint of the existing lot, on approximately 81,000 square feet, and will be sited adjacent to and at a slight skew to the proposed station platform (Figures 22 and 23). The proposed high-level platform will be constructed in a position parallel to a new spur or passing track necessary for freight clearance. If this new track matches the existing track's curvature, then the garage, which must maintain an orthogonal geometry, will be positioned as a chord nearly parallel to the new platform. Placement of the garage seeks to maximize the space remaining for buffer areas, with the residential properties along the east property line.

The station should appear open and accessible to pedestrians and bicycle riders; however private vehicle commuter drop-off/pick-up activity on the street should be discouraged. The site entry/exit from Maple Street for commuters will be to the west, closer to the track than the entry for the student parkers. Commuters entering the site will either be directed immediately to the drop-off area inside the garage, adjacent to the platform, or to the at-grade commuter parking beyond. The proposed schematic plan provides an estimated 202 parking spaces for MBTA commuter use. Curb-side locations for the FSC shuttle and possible local bus service stops may be considered.

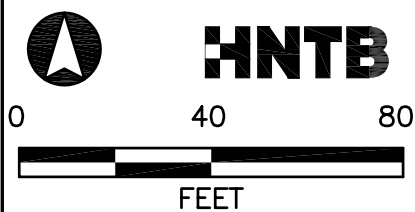
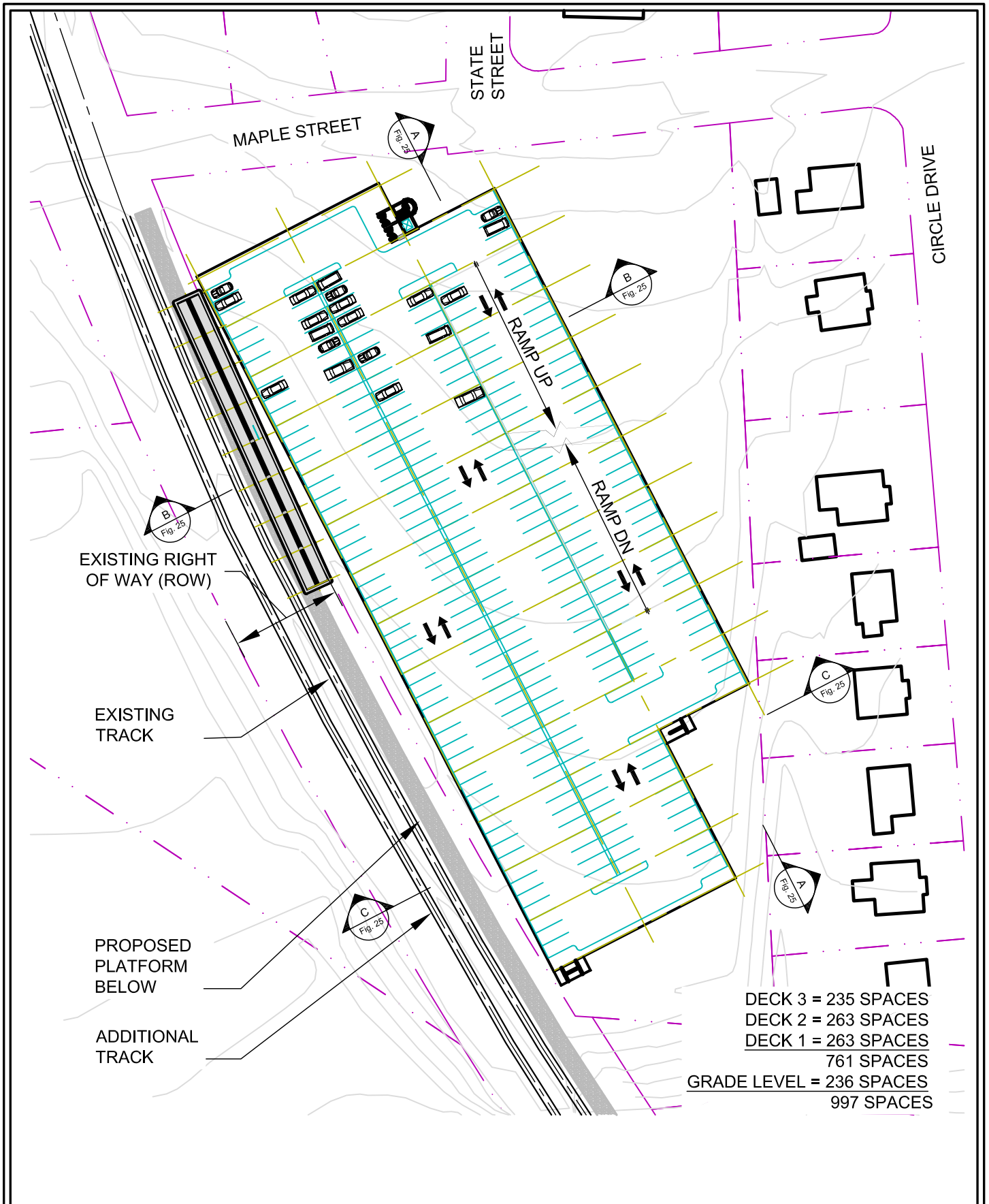
The student entry will be to the east, proximate to the intersection of State Street and Maple Street. Student parkers will be directed to a ramped deck leading immediately to the upper garage levels dedicated for their use. Stairs and an elevator will provide access to the grade level. A shuttle pick-up/drop-off location may be established at the grade level adjacent to Maple Street. Alternatively, the college could elect to have the shuttle van/buses circulate through the garage itself, both as a convenience to the students and as an added security measure. However, the vertical clearance required for the shuttle vehicles the college uses must be examined for the impact it may have on garage design.

The proposed schematic plan for the Maple Street site provides an estimated 795 spaces for FSC parking. A total of 34 of the spaces are located on the lower half of the ramped deck segment shown on the grade level plan. The balance of 761 spaces is distributed among the three deck levels above.



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 Commuter Rail Station  
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Proposed Station  
 Maple Street  
 Grade Level  
**FIGURE 22**



**Framingham State College  
 Commuter Rail Station  
 Feasibility Study**

**Proposed Station  
 Maple Street  
 Deck Level  
 FIGURE 23**



### **6.3. Cost Estimates**

The implementation and related costs for the parking structure include:

- site excavation,
- utility work,
- foundations,
- garage structure consisting of a surface level and three decks,
- garage systems such as lighting and signage.

No garage access control systems are included in this estimate. The typical MBTA parking arrangement would be for the roughly 200 designated commuter spaces to be signed and numbered, with a pay on foot type of system utilizing a collection box near the train station platform.

All of the parking structure construction will take place off of CSX property and can be accomplished without impacting the existing freight service.

The parking garage costs were established based on an industry wide range of between \$12,000 and \$20,000 per parking space. An estimate of \$15,000 per parking space was used for this study. For comparison purposes of alternatives, any change in unit parking space price will equally affect the alternatives.

This cost estimate assumed a relatively simple foundation system (spread footings and grade beams as necessary, but not deep pile foundation), since current geotechnical data was not available. Fly ash contaminated fill from FSC Athletic Center project was disposed of beneath the existing parking lot and was capped beneath a 4-inch asphalt cover. This estimate assumed that the fly ash that was capped under the existing parking lot can be used as sub-grade material below the grade level parking.

As shown in Table 4, the total construction costs for the parking garage are estimated to total approximately \$20.655 million at the Maynard Road site and approximately \$20.243 million at the Maple Street site. The Maynard Road site is projected to cost approximately \$412,000 more than the Maple Street site.

Alternatively, without the commuter rail extension, if a smaller parking garage were to be constructed on the site, for use by FSC only, this could provide 765 spaces at Maynard Road and 734 spaces at Maple Street at an estimated cost of approximately at \$15.471 million and \$14.864 million, respectively. If FSC were to construct a smaller parking garage on the site, for use by FSC only, it could accommodate two decks above the





existing parking lot. This could provide 765 spaces at Maynard Road and 734 spaces at Maple Street, for increases of 335 spaces and 449 spaces, respectively.

**Table 4—Construction Cost Estimate: Parking Garage**

Item	Maynard Road Site	Maple Street Site
Garage	\$15,300,000	\$14,995,000
25% contingency	\$3,825,000	\$3,749,000
8% Engineering Design	\$1,530,000	\$1,500,000
Total	\$20,655,000	\$20,243,000

## 7. Transit/Rail Feasibility

### 7.1. Transit Operations

The Fitchburg Secondary Line is owned by CSX Corporation and presently the MBTA has no rights over this piece of track. The accommodation of passenger service on the Fitchburg Secondary Line would require that the yard limits for North Yard be modified, and would require new operating agreements with CSX. The frequency of service to be accommodated on the Fitchburg Secondary Line would need to be negotiated with CSX. Conflicts with freight movements at North Yard would represent a significant operational issue, as the yard lead is used to assemble train sets and can occupy track for extended periods of time. The adjoining Boston and Albany Line is the most heavily used freight service line in New England, and North Yard is one of two freight rail yards along this line in Framingham (the other being Nevins Yard west of the wye with the Fitchburg Secondary Line).

As the owner and operator of the track, CSX is not obligated to accommodate passenger trains, and for any MBTA passenger service on the line, schedules would be controlled by CSX. CSX operates freight rail traffic over this line (one daily roundtrip), and any commuter rail service would have to be coordinated with CSX, including scheduling, dispatching and clearances.



Service levels along the Fitchburg Secondary Line would also be determined by ridership demands. Extension of commuter rail service to Framingham State College from the Framingham/Worcester Line could be accomplished through either an extension of the service from Boston or a dedicated service on the Fitchburg Secondary Line. Under current conditions, roughly half of the trains to Framingham Station (20 of 40 daily total trips or 10 of 20 roundtrips) continue on to Worcester. If extension of commuter rail service to Worcester is implemented under the Worcester Commuter Rail Service Improvements project, then the number of trains continuing on to Worcester would increase. The number of trains continuing on to Worcester would be determined through negotiations between the MBTA and CSX and could be as few as four trains (two roundtrips). If service was also extended to Framingham Station College, some portion of the remaining trains that do not continue on to Worcester could continue on to Framingham Station College.

Alternatively, a dedicated service could be instituted through use of diesel multiple units (DMUs) rather than the standard push-pull locomotive-hauled coaches. These DMUs may be appropriate for this type of service due to the shorter distances and the need for quick turnarounds. The MBTA is starting to consider the use of DMUs for other portions of the transit system.

The DMU cars are self-propelled and can operate as single units or as trains. DMU equipment would need to comply with current Federal Railroad Administration crash-safety standards. If the decision is made to utilize DMU-type service, the station platform layout in all likelihood would be similar but possibly would involve shorter platform lengths. The use of DMU equipment would require specialized maintenance facilities, which the MBTA does not currently have.

The third option to extend commuter rail service to FSC would be increased service to Framingham (which currently sees forty trains a day from Boston), which would continue on to service Framingham State College. That would also require new operating agreements with CSX for additional service along the Framingham/Worcester Line.

Lastly, any extension to FSC would need to consider the suggested extension of rail passenger service continuing on the Fitchburg Secondary Line to Leominster. The PMT includes a future potential project for a *Commuter Rail Line from Framingham to Leominster*, for the future extension of commuter rail service on the Fitchburg Secondary Line from Framingham to Leominster.

In addition to the potential for commuter rail service expansion to FSC, the campus is presently serviced by the LIFT bus transit system operated by the Town of Framingham. Three of these routes (LIFT 2, 5, and 7) presently service the FSC campus and even



provide access to either the Maynard Road (LIFT 7) or Maple Street (LIFT 5) lots to and/or from downtown Framingham. Other potential transit options include adapting the existing LIFT bus service to accommodate an intermodal FSC facility/parking garage, without the commuter rail extension. Alternatively, with the commuter rail extension, the station development could serve as an intermodal FSC facility to accommodate both commuter rail and bus transit. Under the latter scenario, the existing LIFT bus service and routes could be adapted to accommodate the commuter rail expansion.

## 7.2. Transit Costs per Rider

The MBTA defines cost-effectiveness as capital costs and operating costs per new transit rider and per unit of travel time savings. For the transit portion of the project, construction costs per MBTA rider were estimated to total between \$21,750 (Maynard Road) to \$22,140 (Maple Street) per new rider. These construction costs estimates do not include rolling stock, parking, or layover facilities, and the number of riders was assumed to be constant at both sites (360 riders). These ridership estimates were based on ridership forecasted for the limited weekday peak-period service in the *I-290/Northborough Commuter Rail Extension Feasibility Study* (page 36 and Tables 4-1 and 4-2). This service scenario would involve roughly half of the maximum ridership levels forecasted (that of full service with maximum commute), which was projected to total 720 patrons.

The *I-290/Northborough Commuter Rail Extension Feasibility Study* found that the capital cost per rider would be as follows, under the different operating scenarios evaluated:

- \$201,345 for limited weekday peak service,
- \$137,900 for full service with limited reverse commute,
- \$130,080 for full service with maximum reverse commute,
- \$124,860 for DMU full service with maximum reverse commute.

In this study, another metric, the incremental revenue to operating cost ratio, was the highest for the limited weekday peak service and ranged from 47% (push-pull locomotives) to 51% (DMUs). The revenue to cost ratios were lower for the full service options, and was 22% (locomotive-hauled) to 28% (DMUs) for full service with limited reverse commute, and was even lower for full service with maximum reverse commute (18% for locomotive-hauled and 24% for DMUs).



### **7.3. Environmental Impacts**

Environmental impacts associated with the commuter rail service extension only are addressed below. The impacts associated with the prospective station/parking garage sites are addressed under “Parking Garage Feasibility.”

#### **7.3.1. Traffic and Parking**

There are no grade crossing along the section of the Fitchburg Secondary Line between the Maple Street site and the Framingham wye, since the only roadway crossing in this area, at Mount Wayte Avenue, is grade-separated.

If the Maynard Road site is selected, extension of commuter rail service north of Maple Street would introduce a grade crossing at Maple Street for MBTA commuter trains. The extent of traffic impact to Maple Street would be determined by the number of train crossings.

At existing grade crossings east of the wye with the Fitchburg Secondary Line, traffic impacts would be determined by the frequency of service and any changes in operations to accommodate the commuter rail extension to FSC, as discussed under “Transit/Rail Feasibility.”

#### **7.3.2. Land Use**

Extension of the rail service would be accomplished by upgrading the existing Fitchburg Secondary Line. There is available room within the right-of-way for a second passing track, since the line at one time accommodated two tracks, and the second track was removed. Where additional tracks would be constructed to bypass either North Yard or the existing Fitchburg Secondary track, these tracks would be constructed within the CSX right-of-way. Since this work will be performed entirely within the existing CSX right-of-way, no land use impacts would occur.

#### **7.3.3. Noise and Vibration**

Noise and vibration impacts for this study were assessed according to prediction procedures and impact criteria established in the Federal Transit Administration (FTA) manual for Transit Noise and Vibration Impact Assessment (Final Report, 1995).

##### **7.3.3.1. Noise Impact Criteria**

For noise impacts, the FTA impact criteria are defined as the relative difference between existing noise levels and new project related noise levels. In this established criteria, those noise sensitive land uses with higher existing noise levels are assigned smaller relative increases in project related noise levels before triggering an impact. Table 5 below





summarizes the applicable FTA impact criteria for noise.

**Table 5—FTA Noise Impact Criteria: Effect on Cumulative Noise Exposure**

Ldn or Leq in dBA (rounded to the nearest whole decibel)			
Existing Noise Exposure	Allowable Project Noise Exposure	Allowable Combined Total Noise Exposure	Allowable Noise Exposure Increase
45	51	52	7
50	53	55	5
55	55	58	3
60	57	62	2
65	60	66	1
70	64	71	1
75	65	75	0
Source: FTA Transit Noise and Vibration Impact Assessment, Table 3.3			

For residential land uses, the 24-hour Day-Night Noise Level metric is used for impact assessment. This metric represents the 24-hour equivalent noise level with a 10 decibel penalty for noise during nighttime hours (10 PM to 7 AM).

#### **7.3.3.2. Vibration Impact Criteria**

FTA vibration impacts are based upon projected absolute vibration levels for proposed projects. For residential land uses, the vibration impact criterion is 80 VdB (re 1 micro-inch/sec) for infrequent events (less than 70 vibration events per day).

#### **7.3.3.3. Predicted Noise Impacts**

As shown in the table above, with an existing noise level of 65 dBA, project noise in excess of 60 dBA would constitute an impact. The analysis indicates that sensitive receiver locations within approximately 40 feet of the near-track centerline would expect to experience project-related noise levels of 60 dBA or greater. The site inspection performed for noise-sensitive uses indicates that two single-family homes may be within this distance.

#### **7.3.3.4. Predicted Vibration Impacts**

FTA vibration criteria identify 80 VdB as the impact threshold for residential land uses for infrequent rail events. According to the analysis performed, this level would be experienced at a distance of approximately 80 feet from the proposed track centerline for assumed conditions. The site inspection performed for vibration-sensitive uses indicates that as many as nine homes are within this distance.



#### **7.3.3.5. Noise Impact Abatement Options**

The primary option for rail noise abatement is a noise barrier wall. However, this type of abatement option is generally required to meet cost-reasonableness requirements, and it is rarely possible to justify the high cost of constructing a noise barrier for only one or two noise-impacted receiver locations. An alternative noise abatement option that is sometimes used when noise barriers are not feasible is residential sound insulation treatments, where architectural elements, such as doors and windows are upgraded with acoustically superior replacements that can help reduce interior noise levels.

#### **7.3.3.6. Vibration Impact Abatement Options**

Vibration impact abatement may include ballast mats, resilient tie supports or fasteners, and special track switches. The performance of these vibration abatement treatments can be highly dependent on soil types and special track work requirements.

#### **7.3.4. Natural Resources**

Upgrades to the Fitchburg Secondary Line to accommodate extension of the rail service would not require reconstruction of the Sudbury River Bridge. However, for use of the Maple Street site, the second freight track will extend over the existing river bridge and the train platform will extend to the edge of the river. The only potential direct impacts to natural resources for the proposed transit and track improvements would occur at the Maple Street site, where work will be required at the river with a new track crossing and platform, and a drainage ditch feeding into the Sudbury River would potentially be affected by the station platform. Upgrades to the track in this area would also require work adjacent to the Sudbury River bank and within both the 200-foot riverfront protection area for the Sudbury River and the 100-foot wetland buffer zone. Construction of the new station platform and track would also occur within the 100-year floodplain, although the track improvements would not result in floodplain fill.

Work at the Maynard Road site also may occur within the 100-foot wetland buffer zone for wetlands along Baiting Brook, situated on the opposite (west side) of the track, but no direct alterations of wetland resource areas would occur.

Under the Massachusetts Wetlands Protection Act, work at the Maple Street site for work over and adjacent to the Sudbury River and within the 200-foot riverfront protection area and bordering land subject to flooding will require the filing of a Notice of Intent and the issuance of an Order of Conditions from the Framingham Conservation Commission. Work within the 100-foot buffer zone at Maynard Road may also require filing of a Notice of Intent under the Act.



### **7.3.5. Cultural Resources**

The reactivation of commuter rail service will not directly affect the historical properties that are listed in or eligible for the National Register of Historical Places in downtown Framingham. These historic resources, as discussed in Section 4.7.1, include the Framingham Railroad Station, the Concord Square Historical District, and the Sudbury Aqueduct. These properties currently experience railroad-related noise and vibration generated by the passenger service on the Framingham/Worcester Line operated by the MBTA and Amtrak and existing CSX freight traffic. The incremental increase in rail traffic with service to FSC is not anticipated to have a substantial effect on these National Register Districts or properties near the wye, and no direct impacts should occur for reactivation of passenger rail service on the Fitchburg Secondary Line.

### **7.4. Summary/Recommendations**

The major physical impediment to reinstitution of commuter rail service is the current classification of track from the wye to Route 9 as North Yard (maximum speed limit of 10 mph). Furthermore, commuter rail service will likely conflict with CSX use of the track for staging of freight trains at their North Yard.

Track improvements to accommodate the commuter rail extension on the existing Fitchburg Secondary Line could be accomplished, but would require constructing a bypass, 2,800 feet in length, around North Yard. This would create new interlockings along the bypass, with two new control points that are situated north of the wye with the Framingham/Worcester Line and north of North Yard. A potential platform west of the wye could also be constructed to accommodate boarding and transfers at Framingham Station.

In the area of the FSC campus, the freight track would be relocated around a siding to be located largely on the existing track for each of the station sites, which would diverge from the main track at a wye and new control point for the station. For the Maynard Road station, 900 feet of new track would be constructed and 2,200 feet of track would be relocated to provide a passing track for freight and a separate station siding. The relocated freight track would start south of Maple Street, and a new station at the Maynard Road site would require a grade crossing for passenger trains at Maple Street.

For the Maple Street station, provision of a passing track for freight and a station siding will require construction of 980 feet of passing track for freight trains, and 3,500 feet of relocated freight track. The Maple Street station site will also require a new track crossing on the existing bridge over the Sudbury River, and the platform will extend south and will end before the Sudbury River bridge. Although use of 800-foot platforms are standard throughout the MBTA system, use of a 600-foot platform was assumed to avoid a platform crossing of the Sudbury River. The platform would be curved to match the



existing track curvature and will require greater clearances from the track, which will be problematic for compliance with ADA gap requirements. Use of a 600-foot platform at Maynard Road was also assumed to avoid significant modifications or replacement of an adjoining retaining wall for a residential embankment.

These track improvements are estimated to cost approximately \$7.83 million (Maynard Road site) and \$7.931 million (Maple Street site), which does not include rolling stock, parking, or layover facilities. Assuming that there would be approximately 360 MBTA patrons, the cost per patron would range from \$21,750 at Maynard Road to \$22,140 at Maple Street.

Traffic impacts for additional service along the Fitchburg Secondary Line would be limited to the additional Maple Street grade crossing. However, traffic impacts at grade crossings along the Framingham/Worcester Line east of the wye between the Fitchburg Secondary Line are dependent on whether additional service trains destined for Framingham are required to extend service to FSC. Noise from the additional rail traffic is expected to affect several nearby homes, and vibration impacts could affect as many as nine homes.

Since these track improvements would be performed on the existing track and within the existing right-of-way, they are not expected to involve considerable direct impacts to land uses, natural resources, or cultural resources. A station at the Maple Street site would involve somewhat greater impacts, including the need for an additional track crossing over the Sudbury River and platform extension to the edge of the river.

The other available transit option to provide service from the Maynard Road and Maple Street sites and downtown Framingham is the LIFT bus system, with three routes providing weekday and some weekend service to FSC, with specific service to both the Maynard Road lot (LIFT 7 route) and the Maple Street site (LIFT 5).

Along with the physical and operational constraints cited above, operation of a commuter rail service on the branch will seriously impact the MBTA's main line operations and will require considerable investment in infrastructure and equipment.

## **8. Parking Garage Feasibility**

### **8.1. Parking Garage Capacity**

FSC has a need to accommodate commuter students, which account for the majority of the 61% of the total undergraduate population (roughly 2,400 students) that is not currently in on-campus housing. Depending upon which lot is selected for the development of a parking garage, the alternate location will continue to be used for surface lot parking. It was assumed that roughly 200 spaces would be required for non-





college patrons riding the MBTA. An analysis of each site indicates that an approximately 1,000 car three deck facility could be constructed, with Maynard Road able to accommodate slightly more total spaces than Maple Street. An analysis of each site indicates the following spaces could be accommodated:

Maynard Road Garage w/Maple Street at grade

Grade Level	300 (90 FSC + 210 MBTA)
Deck Level 1	233
Deck Level 2	255
Deck Level 3	232
<u>Total Spaces</u>	<u>1,020 (590 additional, including 380 FSC)</u>
Maple – At-grade	286
<u>Total spaces</u>	<u>1,306</u>

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Maple Street Garage w/ Maynard Road At-grade

Grade Level	236 (34 FSC + 202 MBTA)
Deck Level 1	263
Deck Level 2	263
Deck level 3	235
<u>Total Spaces Garage</u>	<u>997 (711 additional, including 509 FSC)</u>
Maynard -At-grade	430
<u>Total Spaces</u>	<u>1,427</u>

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Placing a station/garage at the Maple Street lot would provide a slightly higher total available parking for the college than at the Maynard Road site. This is because the existing surface lot at Maynard Road, with the largest available parking and 144 more spaces than the Maple Street lot, would be maintained. Based on the assumption that the MBTA needs two hundred spaces for commuters, the use of one of the sites to construct a parking garage would give FSC a net increase (including existing overflow parking) in parking of:

- 380 spaces if the Maynard Street Garage is constructed
- 509 spaces if the Maple Street Garage is constructed.

The Maple Street site would provide a greater increase in overall parking capacity for FSC, and also has more available room in which additional parking could be constructed. The garage was designed with available undeveloped area on the east side that would provide a buffer from residences along Circle Drive. However, ridership and parking demand, is expected to be higher at Maynard Road for both MBTA patrons and FSC commuters.



Assumptions were made regarding the number of spaces needed by the MBTA and FSC. For comparison purposes, it was assumed that MBTA parking demand would be approximately 200 spaces at each site. The MBTA parking demand was based on ridership forecasts for a station at Salem End Road (and Maynard Street) developed in the *I-290/Northborough Commuter Rail Extension Feasibility Study*. Ridership levels for limited weekday peak period service in the study were projected to be roughly ½ of the maximum total ridership. Parking demand at the station was based on a scenario closer to the limited weekday peak period service, and assumed a certain number of drop-offs and patrons arriving on foot (40%), but the number of spaces at the facility would be negotiated between MBTA and FSC.

If the parking garage were developed, it is possible that an arrangement could be made for FSC to occupy most or the entire garage initially, with the MBTA spaces to be expanded with future commuter rail extension and expanding ridership. Additionally, since MBTA commuters would primarily use the parking lot during the day, there may be opportunities for other arrangements to allow FSC to use the parking garage during off-peak commuting hours for special events on campus or night classes.

## 8.2. Costs per Patron

For the parking garage, the total construction costs per rider, assuming roughly 1,000 total patrons served, are estimated to total approximately \$20,250 per patron at the Maynard Road site and approximately \$20,304 per patron at the Maple Street site. This compares to an overall average cost for the MBTA parking program of \$20,213 per patron, as presented in the *Boston Region MPO: Regional Transportation Plan 2004-2025*. However, the garage development would only accommodate between 200 to 210 MBTA riders. The remaining patrons to be served at the parking garage would consist of FSC students.

## 8.3. Accessibility for Public Transportation and FSC

### 8.3.1. MBTA/LIFT Accessibility

From MBTA's point of view, the Maynard Road site will provide much better site access with almost direct access from Route 9. The Maynard Road site is anticipated to generate more ridership, and this consideration would make this site more cost-effective than the Maple Street site, since the costs to upgrade the line segment between the two sites is marginal.

If a parking garage structure is constructed without the commuter rail extension, it is recommended that the garage would need to be built to accommodate the potential for future commuter rail expansion as part of plans to reactive service to Northborough and



Leominster. Without the extension of commuter rail service, a parking garage on the FSC campus could be accessed by commuters on the existing LIFT bus service from downtown Framingham and should be designed to accommodate bus transit. Conversely, if commuter rail service is instituted, the parking garage should be designed as an intermodal facility to accommodate both MBTA commuter rail and LIFT bus service.

### **8.3.2. FSC Accessibility**

A joint commuter rail station / parking facility developed with the MBTA offers a number of potential advantages to Framingham State College. An on campus commuter rail station could offer extraordinary transit options for commuting students. A larger garage facility, designed to serve the needs of both students and commuters may be expected to provide some economies of scale that could reduce the construction cost per parking space.

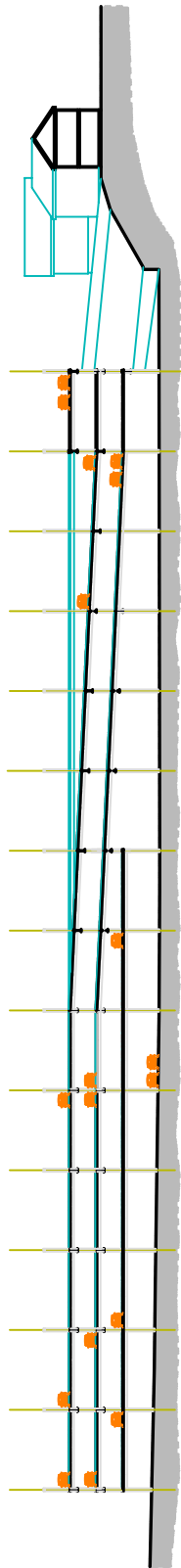
It should be noted that among students, use of the Maynard Road lot is preferred over the Maple Street parking lot. The Maynard Road lot fills up first, due to the proximity of the lot, which adjoins the main campus. In contrast, the Maple Street lot is situated approximately ½ mile to the south of the main campus. The Maple Street site is closer to the Maple Street athletic complex, but further from the rest of the FSC campus. Therefore, from FSC's perspective, the Maynard Road site would be a preferred option.

The grade differences in the area of the southeast corner of the Maynard lot can be taken advantage of to substantially reduce the impact of a parking deck (or multi-level garage) on abutting properties. The scale of the structure will be significantly less visible from outside of the site. The grade difference may also be taken advantage of by means of a pedestrian bridge to take some of the difficulty out of students' hike up the hill to the main campus at the top of Maynard Road. A pedestrian bridge/walkway connection from an upper level of the parking structure could connect to the sidewalk on Maynard Road from between the FSC Facilities Department Office and the Campus Chapel (Figures 24 and 25)

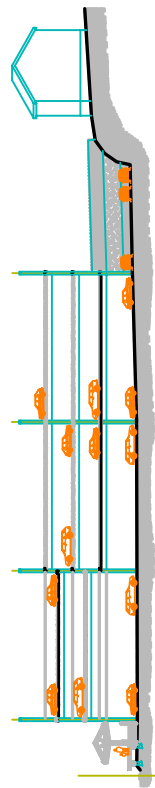
## **8.4. Environmental Impacts**

### **8.4.1. Traffic Impacts to Adjacent Neighborhood**

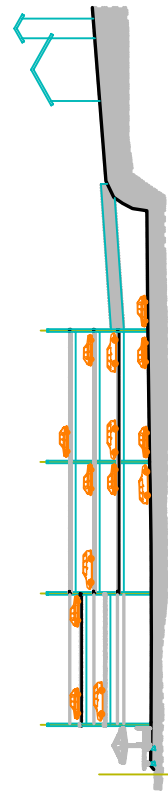
One of the major advantages to the use of this site is that the Maynard Road lot is more accessible from heavily traveled arterials than the Maple Street site. The Maynard Road site intersects, and is proximal to, major arterials, such as Route 9, situated within 400 feet to the north, and Winter Street, located roughly 400 feet to the west. This site would



Section A - A



Section B - B



Section C - C

Sections are shown on Figure 21

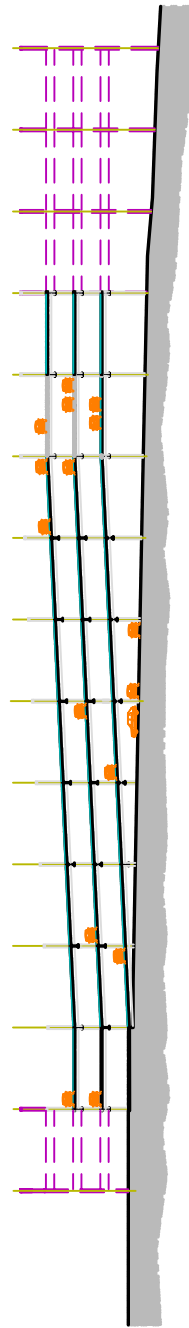
**HNTB**



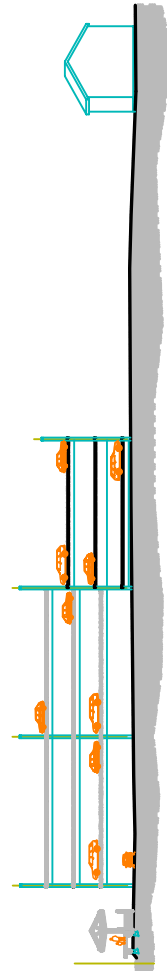
**Framingham State College**  
**Commuter Rail Station**  
 Feasibility Study

**Cross-Sections**  
**Maynard Road**  
**FIGURE 24**

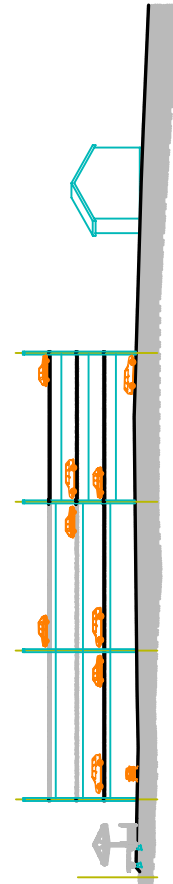




Section A - A



Section B - B



Section C - C

Sections are shown on Figure 23

**HNTB**



**Framingham State College**  
**Commuter Rail Station**  
 Feasibility Study

**Cross-Sections**  
**Maple Street**  
**FIGURE 25**



attract more traffic from Route 9 and other arterials compared to the Maple Street site. Congestion already exists at the intersections of:

- High Street (which becomes Salem End Road to the west) with Main Street/Edgell Road along Route 9 to the northeast, and
- Winter Street and Salem End Road to the west.

Development of a station site/parking garage at the Maynard Road site may exacerbate the existing congestion problems at these areas, which will affect more non-user traffic. It is anticipated that, under the parking garage concept shown in Figures 20 and 21, the proposed development would create as many as 590 additional roundtrips, or 1,180 trips into and out of the site. Station site development at this location will require further evaluation of the potential traffic impacts at adjoining intersections, particularly the Main Street/Edgell Road intersection along Route 9.

On-street parking is currently a problem around the campus and a concern of the neighborhoods around FSC. Provision of additional parking would alleviate the demands for on-street parking, but would introduce additional traffic into residential areas. This impact may be somewhat greater at the Maple Street site, since the Maynard Road site also adjoins or is located proximal to existing commercialized areas along Route 9 and FSC college facilities.

The Maple Street site is more proximal to quieter residential streets and traffic originating from the south, such as Route 135. The site is situated approximately 800 feet west of Winter Street and roughly 1,000 feet east of Franklin Street, two major north-south arterials. Roadways in the immediate vicinity of the Maple Street site currently do not experience severe congestion; however, a new parking garage development may create additional traffic on quiet residential streets. Under the proposed parking garage concept shown in Figures 22 and 23, the increase in traffic at the Maple Street site would be as many as 711 roundtrips or 1,422 trips in and out of the site. This traffic increase at the Maple Street site would be somewhat greater (additional 242 trips) than at the Maynard Road site, due to the smaller size of the existing Maple Street lot.

Station site development at either location will require further evaluation to determine the effects on nearby intersections.

#### **8.4.2. Land Use and Zoning**

At either site, the proposed station site and parking garage would be constructed on properties owned either by CSX or Framingham State College. Both sites are zoned for single-family (8,000 sf lots) residential (R-1) uses, as is the entire FSC campus.



The Maynard Road site is adjoined by the FSC Facilities Department and the Campus Chapel off of Church Street, and the proposed station site/parking garage is more compatible with the college setting at FSC and with commercial uses off of Route 9 to the north. However, the only developed residential properties bordering directly with the proposed site are located at its southern border - four homes on Mayflower Circle. Other residential properties are generally well separated from the immediate site. Along the site's westerly border, on the far side of the right of way, is a fairly large area that includes undeveloped wetlands and property providing a separation and buffer for the residences on the east side of Winter Street. The Jewish Philanthropies building that includes a community center is also located in this area. To the east, on the other side of Maynard Road, all of the property belongs to FSC, except for an apartment building on Salem End Road. To the north, the area between Salem End Road and Route 9 is zoned for Business District (B) uses and is currently occupied by a mix of retail, office and light manufacturing commercial activities.

The Salem End Apartment, a multi-story apartment building located at the southeast corner of Maynard and Salem End Roads, is set back from the adjacent streets by a parking area for residents of the building. The establishment of a commuter station and parking facility may be advantageous to this property as residents will be able to take advantage of the commuter rail station and the availability of additional parking for use by evening and weekend guests. A station development at the Maynard Road site would also present greater potential for transit-oriented development.

However, construction of the station site and parking garage would introduce a new station use and associated traffic into areas adjoining residential properties. This effect would be greater at Maple Street, which is adjoined by quieter residential neighborhoods on almost all sides. The west side of the CSX track includes the Maple Street athletic complex, but the remainder of the lot adjoins residences, including eight residences on Circle Drive. The parking garage development at Maple Street is also less consistent with the presence of adjoining MDCR conservation lands south of the site.

#### **8.4.3. Noise**

The Maple Street site is surrounded by a greater number of noise-sensitive uses and is anticipated to experience lower ambient noise levels. These noise-sensitive receptors include eight residential properties along Circle Drive that border on the site, in addition to residential properties along Maple Street and along roads leading into the site. In contrast, the Maynard Road site adjoins campus facilities on one or more sides and is located on a busy arterial off Route 9. The sensitive receptors bordering on the Maynard Road site include three residences on Mayflower Circle that border the south side of the site and the Salem House Apartment north of the site. The potential for noise impacts to adjoining properties due to increased traffic generated by the station/parking garage



development is considered to be greater at the Maple Street site, as described in the previous section.

#### **8.4.4. Natural Resources**

The development of the Maple Street site would involve greater impacts on natural resources, due to the proximity of the Sudbury River on the south end of the site. Development of the parking garage would be located within the 100-year floodplain and would also require work within the 200-foot riverfront protection area along the Sudbury River. The existing drainage channel that extends along the west side of the Maple Street parking lot and that discharges via a culvert into the Sudbury River may be culverted or otherwise affected by the station site development. Work within the riverfront protection area and 100-year floodplain will require filing of a Notice of Intent under the Massachusetts Wetlands Protection Act.

Development of the Maynard Road site is not anticipated to involve impacts on wetlands or floodplains, but may extend within the 100-foot buffer zone for the forested wetlands along Baiting Brook, situated on the west side of the CSX line. Work within the 100-foot buffer zone may require a filing with the Framingham Conservation Commission.

Subsurface construction for the garage foundation at the Maynard Road site will also encounter fly ash that was disposed of under the asphalt cap at the existing lot. Any hazardous materials encountered would be handled in accordance with applicable federal and state regulations.

#### **8.4.5. Cultural Resources**

##### **8.4.5.1. Maynard Road Parking Lot Site**

Since the garage and platforms would not physically alter any known historic resource, the only potential impact of the proposed action at this site would be visual. Applying the criteria of effect as codified at 36 CFR 800.5, it would appear that, depending on the location and design of the parking lot, the project could have no adverse effect on the adjacent cultural resources.

The current grade level parking lot is substantially lower than the academic areas of the campus. Maynard Road climbs more than 30 feet from the parking lot entry to the intersection with State Street. This topography could screen a garage structure. At its southeast corner, the existing parking lot is estimated to be 15 to 20 feet below the grade of adjacent properties. A multi-level garage structure in this location would minimize any visual impacts. St. John's Church would be minimally visually impacted.





#### **8.4.5.2. Maple Street Parking Lot Site**

Since the site may be archaeologically sensitive, the proposed garage and platform could have an adverse effect on archaeological remains, an issue that could only be resolved by further testing (36 CFR 800.5). The other potential impact of the proposed action at this site would be visual. The multi-level garage would be out of character with neighboring small-scale historic structures.

#### **8.4.5.3. Summary**

Although both sites would impact historic or archaeological properties to some degree, it appears that the impacts at the Maynard Road site could be more easily mitigated than those at the Maple Street site.

### **8.5. Summary/Recommendations**

The development of a station site/parking garage on the Maynard Road site would be more advantageous from a ridership perspective, due to its proximity to major arterials such as Route 9. Development of the Maynard Road site would also provide more convenient access to the FSC campus and would better serve commuter students. The potential for transit-oriented development would also be greater at the Maynard Road site, due to its proximity to commercial and multi-family developments and Route 9. Both sites would generate increased traffic into the site, and this may have a greater effect on intersections that are already congested at the Maynard Road site. However, a station location at the Maple Street site would introduce traffic into a less compatible setting: a quiet residential neighborhood. Traffic impacts associated with the parking garage development at either site, and traffic patterns from Route 9, warrant further evaluation should the project be advanced. Either station location would present the potential benefit of reducing traffic impacts on neighborhoods affected by commuters driving to and from the existing Framingham Station in downtown Framingham.

The impacts on land use, noise, natural resources, and cultural resources also seem to indicate that impacts would be somewhat lesser with development of the Maynard Road site, due to the proximity of the Maple Street site to residential neighborhoods and open space and wetland/floodplain resources along the Sudbury River. The garage at the Maple Street site would be located within the 100-year floodplain and work would be required within the 200-foot riverfront protection area for the Sudbury River.

Both garages can be accommodated on the existing parking lots for commuters, with three decks over a footprint of roughly 80,000 square feet. At both sites, a total of roughly 1,000 total spaces would be provided for both MBTA commuters and FSC students. The Maple Street site would provide more additional capacity than the Maynard Road lot (roughly 130 more spaces), and there is more room available that is used to buffer



residences for parking expansion on the site. However, this site is expected to generate less ridership due to its more remote location from Route 9 and the FSC campus.

The total construction costs for the parking garage are estimated to total approximately \$20.655 million at the Maynard Road site and approximately \$20.243 million at the Maple Street site. The cost per rider for development of the Maynard Road site is \$20,250 compared to \$20,304 for the Maple Street site, assuming both sites would only accommodate between about 200 to 210 MBTA patrons. The Maple Street site would provide an additional 121 total spaces and 129 additional spaces for FSC students over the Maynard Road site.

Of the two sites, the Maynard Road site would have the most potential to meet the needs of FSC.

## **9. Summary of Findings and Recommendations**

A significant operational issue for reactivation of passenger rail service to Framingham State College will be the current designation of the Fitchburg Secondary Line in the study area as part of North Yard. Redesignation of the yard limits, and upgrades to the Fitchburg Secondary Line to accommodate commuter rail service would be required. Extension of commuter rail service could be accommodated through track improvements to bypass the CSX North Yard, just north of the wye with the Fitchburg Secondary Line. In addition, to a 0.53-mile bypass track for commuter trains on the east side of yard, the existing freight siding track would be extended 600 feet south to the western wye connection with the Framingham/Worcester Line. A separate passing track for freight trains, which would extend over a distance of 0.59 mile at Maynard Road and 0.85 mile at Maple Street, is also proposed to provide a separate siding at the stations for commuter trains. These track improvements, which would include installation of a signal system and station platform, could be constructed at an estimated cost of approximately \$7.83 million at the Maynard Road site and \$7.971 million at the Maple Street site. These estimates do not include rolling stock, parking, or layover facilities.

The passenger rail service could be provided through traditional push-pull locomotives currently used by the MBTA or through the use of diesel multiple units. This service to FSC would be compatible with the suggested extension of commuter rail service on the Fitchburg Secondary Line to Leominster, a project that is listed on the MBTA's Program for Mass Transportation, the major capital planning element of the MBTA to the year 2020. The station site also could be incorporated into the LIFT bus system, which currently includes several routes connecting the FSC campus and downtown Framingham, with or without the commuter rail extension.



This conceptual feasibility study assumed that a Framingham Center station site could be located on the FSC campus at either Maynard Road or Maple Street. A four-story garage on approximately 80,000 square feet could be constructed on the footprint of the existing Maynard Road lot. This garage would accommodate 997 spaces. At the Maple Street site, a four-story garage on approximately 81,000 square feet could be constructed within the footprint of the existing parking lot to provide 1,020 spaces. With approximately 200 spaces reserved for commuters at grade level, the parking for FSC would total 380 spaces at the Maynard Road lot and 509 spaces at the Maple Street lot distributed largely among the three upper decks. The estimate of MBTA parking demand was based on ridership forecasts for limited peak period weekday service from the *I-290/Northborough Commuter Rail Extension Feasibility Study*, which would be roughly half that of maximum full service, and also assumed that 40% of patrons would arrive on foot. The costs for the parking structure are estimated to total approximately \$20.655 million at the Maynard Road site and \$20.243 million at the Maple Street site. Total project costs for construction at Maynard Road would total \$28.485 million, compared to \$28.214 million at Maple Street.

Of the two station sites evaluated, the Maynard Road site would have the most potential to meet the needs of FSC. Its location close to Route 9 and the main campus of Framingham State College is expected to generate the highest ridership and is more compatible with both the surrounding commercial district along Route 9 and the adjacent campus uses. This location also has greater potential for transit-oriented development. A station at the Maple Street lot would provide somewhat greater capacity (130 additional spaces), but would be located in the midst of a predominantly residential area that is further from both major arterials and the FSC main campus. The Maple Street site would also involve greater environmental impacts, requiring a track crossing of, and platform extension to, the Sudbury River and work within the 100-year floodplain and 200-foot riverfront protection area. A station location at this site would also require a curved platform, the configuration of which (with a larger separation from the track) will be problematic for compliance with ADA gap requirements. Further traffic investigations at either station/parking garage site of traffic patterns to and from Route 9 are recommended should the project be advanced. Either station site may represent an improvement in traffic impacts on neighborhoods currently affected by commuters accessing the Framingham Station site in downtown Framingham.

Implementation of the project will require coordination with both CSX for changes in operational agreements, and will also require coordination with FSC. An arrangement for phasing of MBTA parking could be negotiated with FSC, with the proportion of parking to be provided increasing over time with expansions in commuter rail service and projected ridership demands.



It must be understood, however, that along with the physical and operational constraints cited above, operation of a commuter rail service on the branch will seriously impact the MBTA's main line operations and will require considerable investment in infrastructure and equipment. Extension of service to Framingham State College would not be further pursued until such time as further evaluation of service from Framingham to Leominster is undertaken.